

Service Manual



DVR-RT400-S

ORDER NO.
RRV3052

DVD-Recorder and Videorecorder

DVR-RT400-S

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Region No.	Remarks
DVR-RT400-S	NYXGB	AC230V	2	



For details, refer to "Important Check Points for good servicing" .

1 2 3 4

SAFETY INFORMATION

!

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.



Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING



This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 – Proposition 65

NOTICE

Fuse symbols  (fast operating fuse) and/or  (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE

Les symboles de fusible  (fusible de type rapide) et/ou  (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

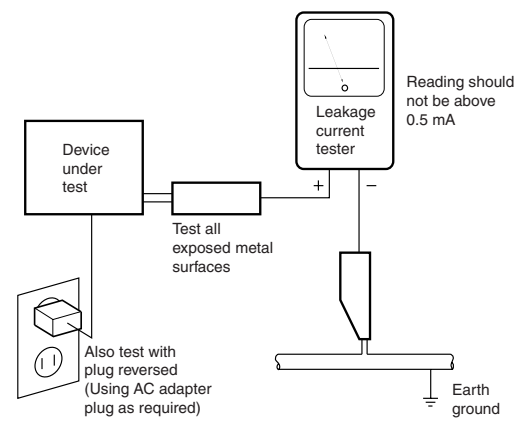
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual. The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

IMPORTANT
THIS PIONEER APPARATUS CONTAINS
LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS
SHOULD BE DONE BY A SPECIALLY
INSTRUCTED PERSON.

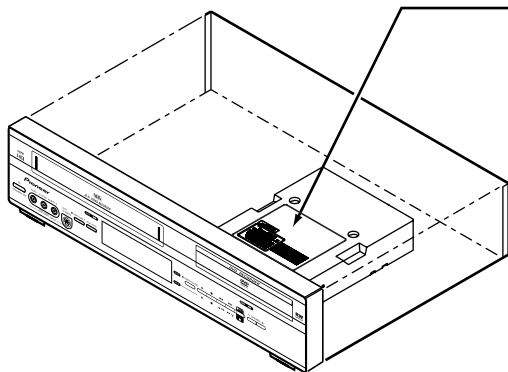
LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER : 50 mW
WAVELENGTH : 654 - 662 nm

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER : 100 mW
WAVELENGTH : 780 - 787 nm

WARNING!

DEVICE INCLUDES LASER DIODE WHICH
EMITS INVISIBLE INFRARED RADIATION
WHICH IS DANGEROUS TO EYES. THERE IS
A WARNING SIGN ACCORDING TO PICTURE
1 INSIDE THE DEVICE CLOSE TO THE LASER
DIODE.

■ LABEL CHECK



CAUTION: CLASS 1 LASER PRODUCT
ATTENTION: CLASSE 1 LASER PRODUCT
ADVERTENCIA: CLASE 1 LASER PRODUCT
VERBODEN: CLASSE 1 LASER PRODUCT
CERTIFICATION: THIS PRODUCT COMPLIES WITH 21 CFR 1040.10 AND 1040.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER NOTICE NO. 80, DATED JULY 28, 2001.

CAUTION: CLASS 1 LASER PRODUCT
ATTENTION: CLASSE 1 LASER PRODUCT
ADVERTENCIA: CLASE 1 LASER PRODUCT
VERBODEN: CLASSE 1 LASER PRODUCT
PRECAUCION: CLASE 1 LASER PRODUCT
CLASS 1 LASER PRODUCT
LASER KLASSE 1

DRW2194

Additional Laser Caution

1. The ON/OFF(ON:low level,OFF:high level) status of the CLAMP signals for detecting the loading state are detected by the drive CPUs, and the design prevents laser diode oscillation when the CLAMP signal turns OFF.
In normal operation, if no disc is clamped, the laser diode oscillation is disabled.
However, the interlock does not always operate in the test mode.
2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 3A laser beam.

[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

A

1. Product safety



Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

- ① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

- ② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

- ③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

- ④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

- ⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

- ⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

- ⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

- ⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

- ⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

- ⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

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2. Adjustments



To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts



Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

E

4. Cleaning



For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws



To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

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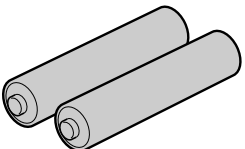
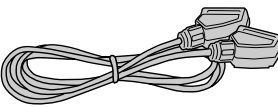
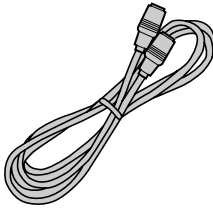
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1. SPECIFICATIONS


G-1	Outline of the product			DVD-R/-RW Video Recorder & VHS Player/Recorder		
G-2	DVD System	Color System		PAL		
		Disc Format	Rec	DVD-R/-RW		
			Play	DVD-R/-RW, DVD-Video, CD-DA, CD-R/-RW		
		Disc Diameter		120 mm , 80 mm		
		Deck	Disc Loading System		Front Disc Loading	
			Motor		3 Motors	
		Pick up		1-Lens 2-Beams System		
		Rec Time (Aprox.) at 4.7GB Disc	XP	1 hour	at	10Mbps
			SP	2 hour	at	5Mbps
			LP	4 hour	at	2.5Mbps
			SLP (EP)	6 hour	at	1.6Mbps
		Playback time (Max)	DVD 1-Layer	135min	(4.7GB)	
			DVD 2-Layer	245min	(8.5GB)	
			CD	74min		
			VIDEO CD	--		
Search speed	Actual	Fwd	4 step			
			2-45 times (DVD)			
	Actual	Rev	4 step			
			2-45 times (DVD)			
	Actual		4-40 times (CD)			
Slow speed	Actual	Fwd	1/8-1/2 times			
			--			
	Actual	Rev	--			
			--			
G-3	VCR System	System		VHS Player / Recorder		
		Video System		PAL/SECAM/MESECAM		
		Hi-Fi STEREO		Yes		
		NTSC PB (PAL60Hz)		Yes		
		Deck	DECK		OVD-7	
			Loading System		Front	
		Motor		3		
		Heads	Video Head		4Head	
			FM Audio Head		2Head	
		Audio / Control		Mono / Yes		
		Erase (Full Track Erase)		Yes		
		Tape Speed	Rec	PAL/SECAM	SP/LP	
				NTSC	-	
			Play	PAL/SECAM	SP/LP	
				NTSC	SP	
Fast Forward / Rewind Time (Approx.) at 25°C			FF:1'12" / REW:1'12"			
with Cassette			E-180			
Forward/Reverse		NTSC or PAL-M	SP = 3x,5x			
Picture Search		PAL or SECAM	SP/LP=5x,7x / 7x, 13x			
Frame Advance			Yes			
Slow Speed			1/5, 1/10, 1/30			
G-4	Tuning System	Broadcasting System		CCIR, FRENCH System BG, L		
		Tuner and Receive CH	System	1Tuner		
			Destination	Oscar (w/HYPER), France CATV		
		Tuning System		F-Synth		
		Input Impedance		VHF/UHF 75 ohm		
		CH Coverage	(SECAM)	F2~F4, FB~FQ, F21~F69		
			(PAL)	E2~E4, X~Z+2, S1~S10, E5~E12,S11~S41,E21~E69		
		Intermediate Frequency	Picture (FP)		PAL /SECAM (U&VH) /SECAM (VL)	
			Sound (FS)		38.9 / 38.9 / 34.4MHz	
			FP-FS		33.4 / 32.4 / 40.9MHz	
					5.5 / 6.5 / 6.5MHz	
		Auto Tuning Method		ALL Band (Not C.C.I.R. CH Plan)		
		Auto Guide Ch Area		--		
		Preset CH		80CH		
		RF Converter Output			No	
			Channel		--	
			Level/Impedance		--	
			Sound Selector		No	
Stereo/Dual TV Sound		G.ST/NICAM DUAL				
Tuner Sound Muting		Yes				

G-5	Power	Power Source	AC	230V 50Hz
			DC	--
		Power Consumption	Stand by (FIP Off)	28 W at 230V 50Hz
			Stand by (FIP On)	5.5 W at 230V 50Hz
G-6	Regulation		Per Year	6 W at 230V 50Hz
			-- W	-- W
		Protector	Power Fuse	Yes
			Safety Circuit	Yes
G-7	Temperature		IC Protector (Micro Fuse)	Yes
			Safety	CE
			Radiation	CE
			Laser	--
G-8	Operating Humidity	Operation		5°C - 35°C
		Storage		-20°C - 60°C
G-9	Signal	Video Signal	Output Level	1 V p-p / 75 ohm (DVD, VCR)
			S/N Ratio (Weighted)	65 dB (DVD-Video) 53 dB (VCR)
			Horizontal Resolution	500 Lines (DVD-Video) 240 Lines (VCR)
		RGB Signal	Output Level	0.7V p-p/75 ohm
		Audio Signal	Input Level Microphone	--
			Input Level Line	-3.8 dBm / 50k ohm (VCR, 0dBm=0.775Vrms)
			Output Level Line	-3.8 dBm / 1k ohm (VCR, 0dBm=0.775Vrms)
				-12dB / 1k ohm (DVD, -20dBfs 0dBfs=2.0Vrms)
			Digital Output Level	0.5 V p-p / 75 ohm (DVD)
			S/N Ratio at (Weighted)	90dB (DVD-Video), 42dB (VCR at SP)
			Harmonic Distortion (1kHz) Typical	0.06% (DVD-Video), 1.5% (VCR at SP)
			Frequency Response : DVD Mode at DVD	4 Hz - 22 kHz
			DVD Mode at VIDEO CD	--
			DVD Mode at SVCD	--
			DVD Mode at CD	4 Hz - 20 kHz
			VCR Mode at SP	100 Hz - 10 kHz
			VCR Mode at LP	100 Hz - 5 kHz
			VCR Mode at SLP (EP)	--
		Hi-Fi Audio Signal	Dynamic Range : More than	75dB
			Frequency Response	20Hz ~20kHz
			Wow And Flutter : Less than	0.01 %Wrms
			Channel Separation : More than	60 dB
			Harmonic Distortion : Less than	0.01

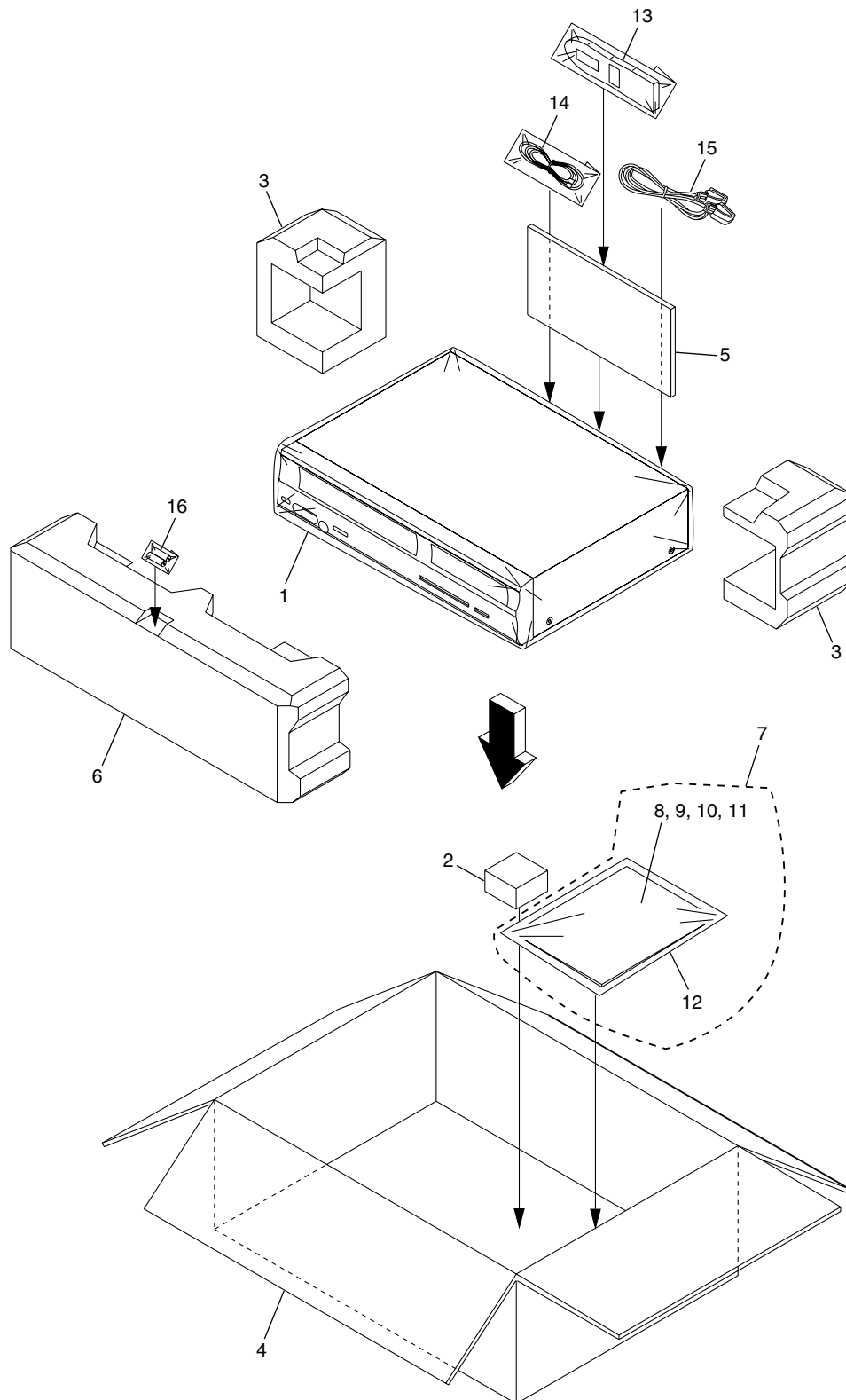
Accessories

 <p>Transmitter unit (076R0JZ030)</p>	 <p>Dry cell battery (AAA/R03)</p>	 <p>21 pin SCART cable (06CDVA5002)</p>	 <p>75 Ω coaxial cable (06CDL020004)</p>
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2. EXPLODED VIEWS AND PARTS LIST

NOTES: ● Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
● The  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
● Screws adjacent to ▼ mark on product are used for disassembly.
● For the applying amount of lubricants or glue, follow the instructions in this manual.
(In the case of no amount instructions, apply as you think it appropriate.)

2.1 PACKING



PACKING parts List

<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>
1	Gift Sheet	791UHAA001
2	Package,Pad	792UHA0209
3	Package,Back	792UHAA063
4	Gift Box	793UCD1215
5	Pad,DVD/VR (155 x 250)	795UCA0021
6	Package Front Assy	7A7920001A
7	Instruction Book Kit	A2E905T975
8	Guarantee Card	J2E390402A
9	Warning Sheet	J2E90428A
10	Operating Instructions (English, French, German)	J2E90521A
11	Operating Instructions (Dutch, Spanish, Italian)	J2E90531A
12	Polyethylene bag,Instruction	JA4XD400
13	Transmitter Unit	076R0JZ030
14	75 ohm Coaxial Cable	06CDL02004
15	21 pin SCART Cable	06CDVA5002
NSP 16	Battery (AAA/R03)	1412004013

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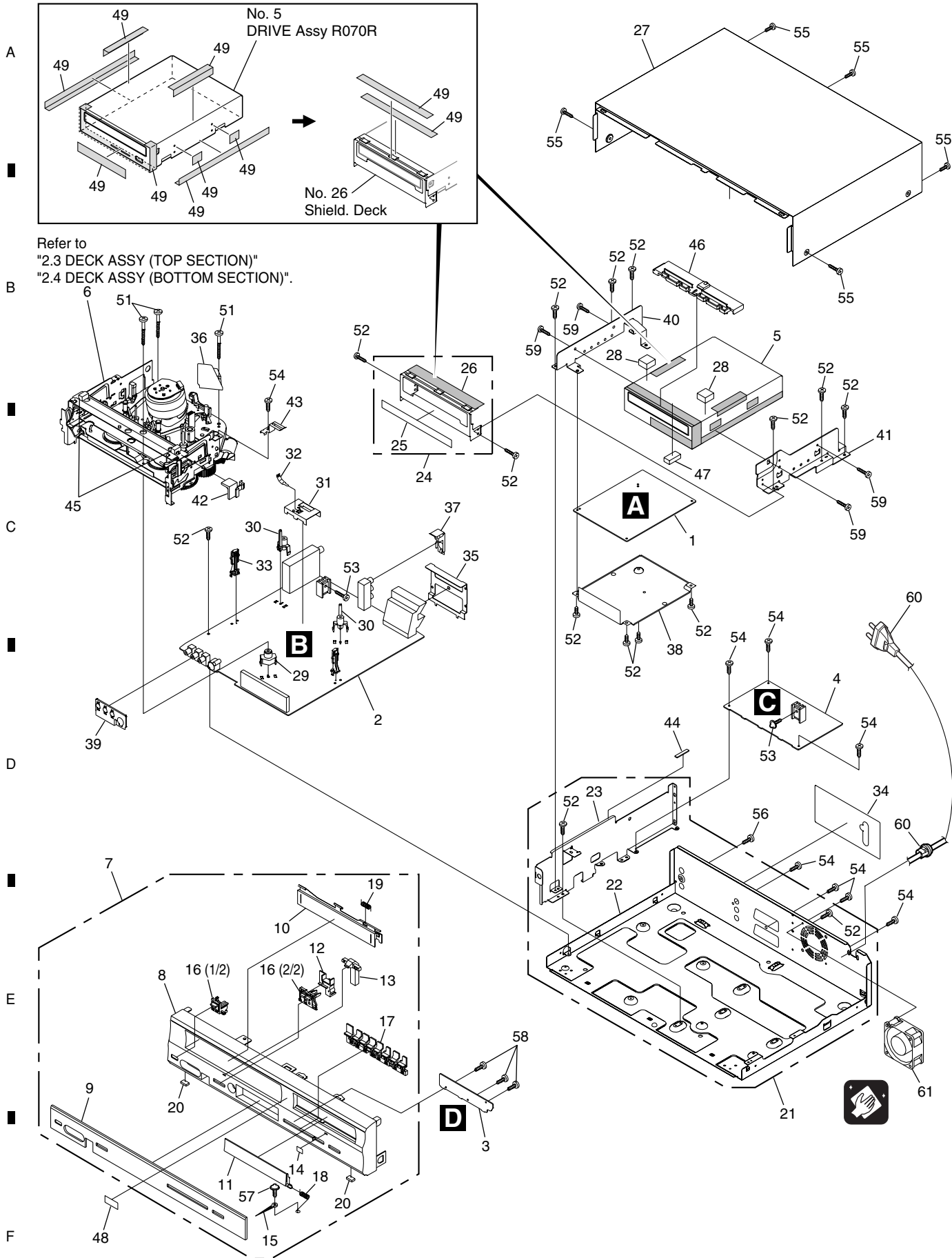
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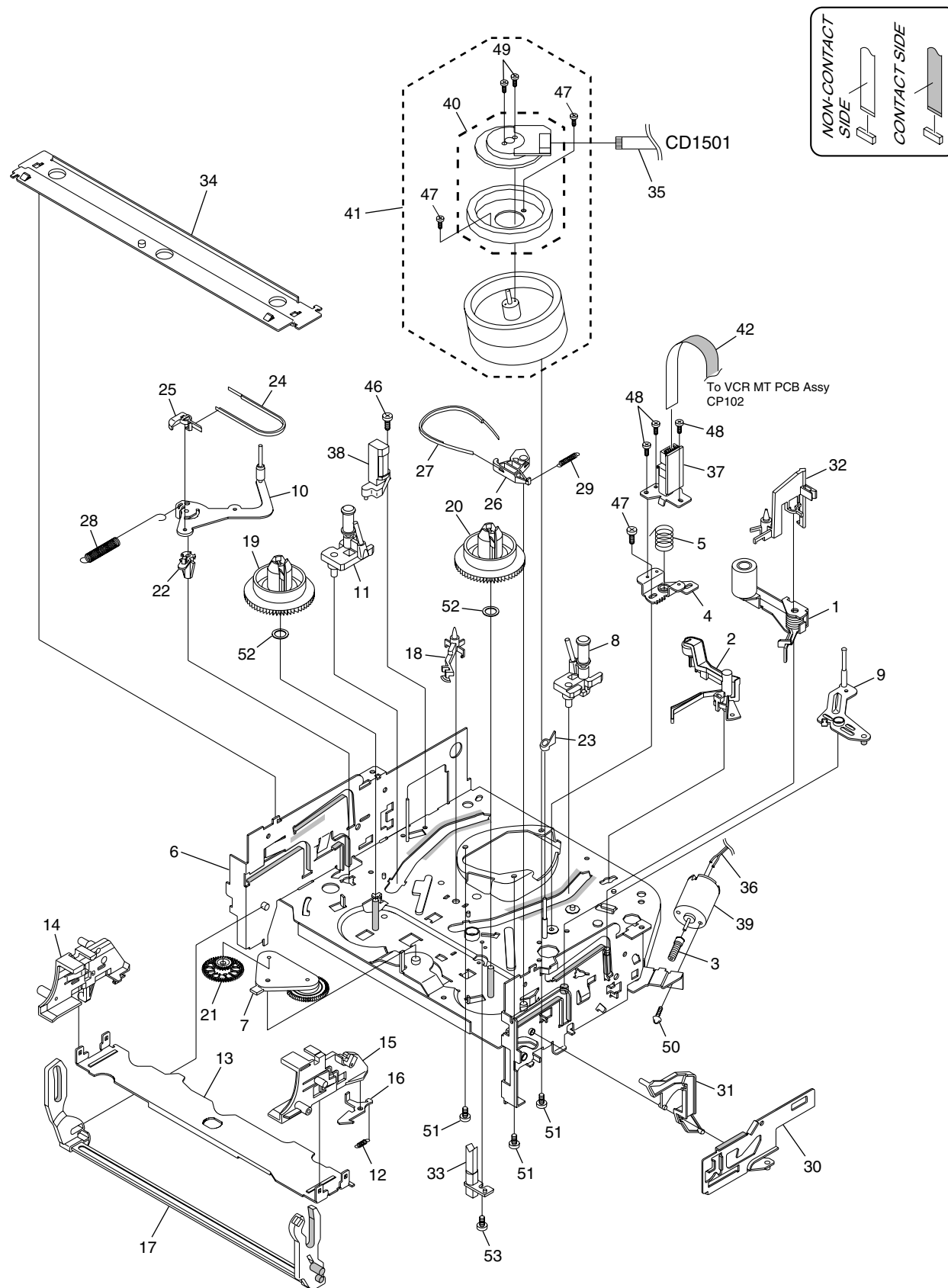
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2.2 EXTERIOR SECTION



2.3 DECK ASSY (TOP SECTION)



DECK ASSY (TOP SECTION) parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.	
1	Pinch Roller Block VA2	85OA400245	50	Screw/Washer (A)	810A130404	A
2	AHC Assy	85OA500026	51	Screw/Washer (A)	810A126504	
3	Worm	85OP600581	52	Polyslider Washer	82Q264713N	
4	Base, AC Head	85OP500083	53	Screw	8107226604	
5	Spring, AC Head	85OP800324				
6	Main Chassis Assy	85OA000516				
7	Arm Idler Assy	85OA200090				
8	Inclined Base T Unit 3S	85OA400223				
9	P5 Arm Assy 2	85OA400232				
10	Tension Arm Assy 2	85OA400235				
11	Inclined Base S Unit	85OA400231				B
12	Spring, Locker	85OP800367				
13	Cass, Holder	85OP900736				
14	Cass, Side L	85OP900748				
15	Cass, Side R	85OP900749				
16	Locker, R	85OP900739				
17	Link Unit	85OA900228				
18	Post, Cass Guide	85OP000496				
19	Reel, S (S)	85OP200316				
20	Reel, T (S)	85OP200317				C
21	Gear, Idler	85OP200308				
22	Holder, Tension	85OP400492				
23	Cap. P4	85OP400520				
24	Band, Tension	85OP400542				
25	Connect, Tension	85OP400533				
26	Arm, Brake T	85OP600573				
27	Band, Brake T	85OP600584				
28	Spring, Tension	85OP800322				
29	Spring, Brake T	85OP800360				
30	Lever, Link	85OP900743				D
31	Lever, Flap	85OP900744				
32	Cass, Opener	85OP900745				
33	Reflector, LED	85OP700035				
34	Bracket, Top 3V	85OP900746				
35	Cord Jumper (CD1501)	122H071603				
36	Cord Jumper (CD1502)	122Y021902				
37	Head (Audio Control)(H5001)	1523Q91003				
38	Head (Full Erase)(H5002)	1543Q02014				E
⚠ 39	Motor, Loading (M101)	1596S98002				
40	Micro Motor (M2003)	1589S11020				
⚠ 41	Cylinder Unit Assy (UN4001)	A5L1046500				
42	Cord Jumper (CD102)	122F061501				
43					
44					
45					
46	Screw	8107226804				
47	Screw	8107226404				F
48	Screw	8102120604				
49	Screw	8109126604				

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2.4 DECK ASSY (BOTTOM SECTION)

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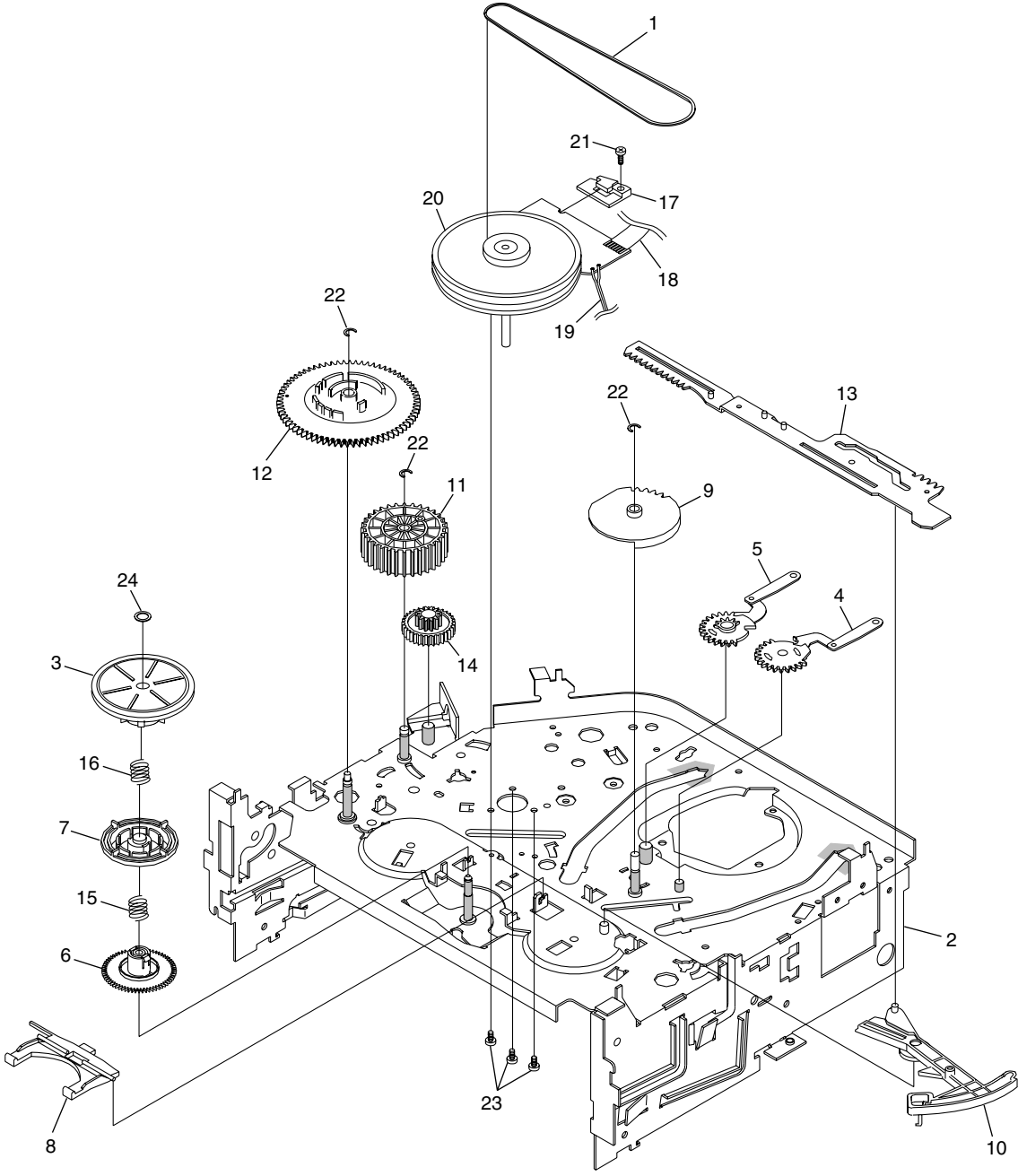
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DECK ASSY (BOTTOM SECTION) parts List

Mark No.	Description	Part No.
1	Belt, Capstan (S)	85OP200290
2	Main Chassis Assy	85OA000516
3	Clutch Assy	85OA200089
4	Loading Arm S Unit	85OA300065
5	Loading Arm T Unit	85OA300066
6	Gear, Clutch	85OP200311
7	Gear, Coupling	85OP200312
8	Lever, Clutch	85OP200313
9	Gear, Main Loading	85OP300194
10	Lever, Tension	85OP400490
11	Cam, Pinch Roller	85OP600577
12	Cam, Main	85OP600578
13	Rod, Main	85OP600579
14	Gear, Joint	85OP600582
15	Spring, Coupling	85OP800355
16	Spring, Ring	85OP800356
17	Holder, Capstan	85OP400549
18	Cord Jumper (CD1501)	122H071603
19	Cord Jumper (CD1502)	122Y021902
⚠ 20	Capstan DD Unit (M2001)	1510S98043
21	Screw	8107226804
22	E-Ring	83ETW30000
23	Screw	8109126604
24	Polyslider Washer	82P184505N

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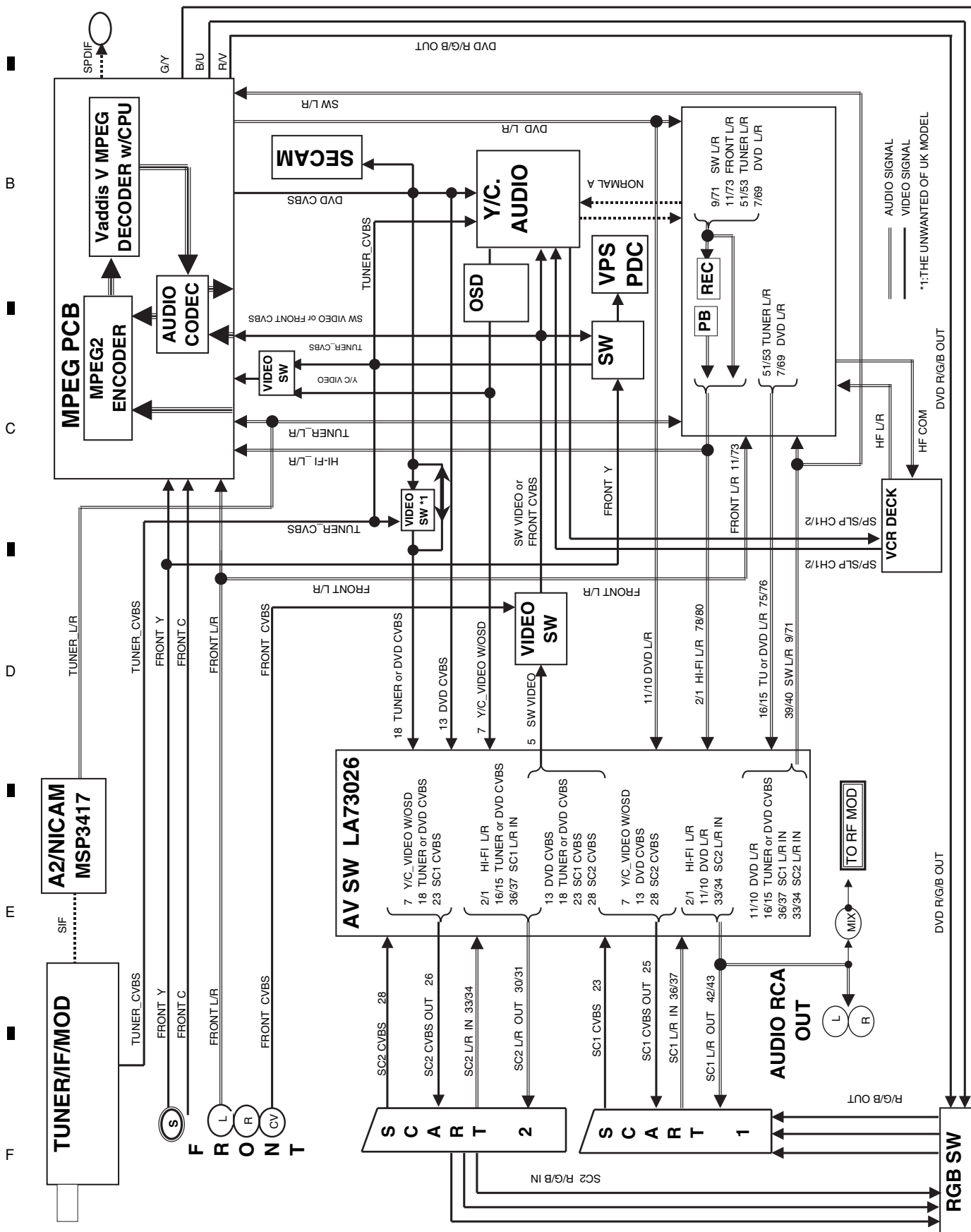
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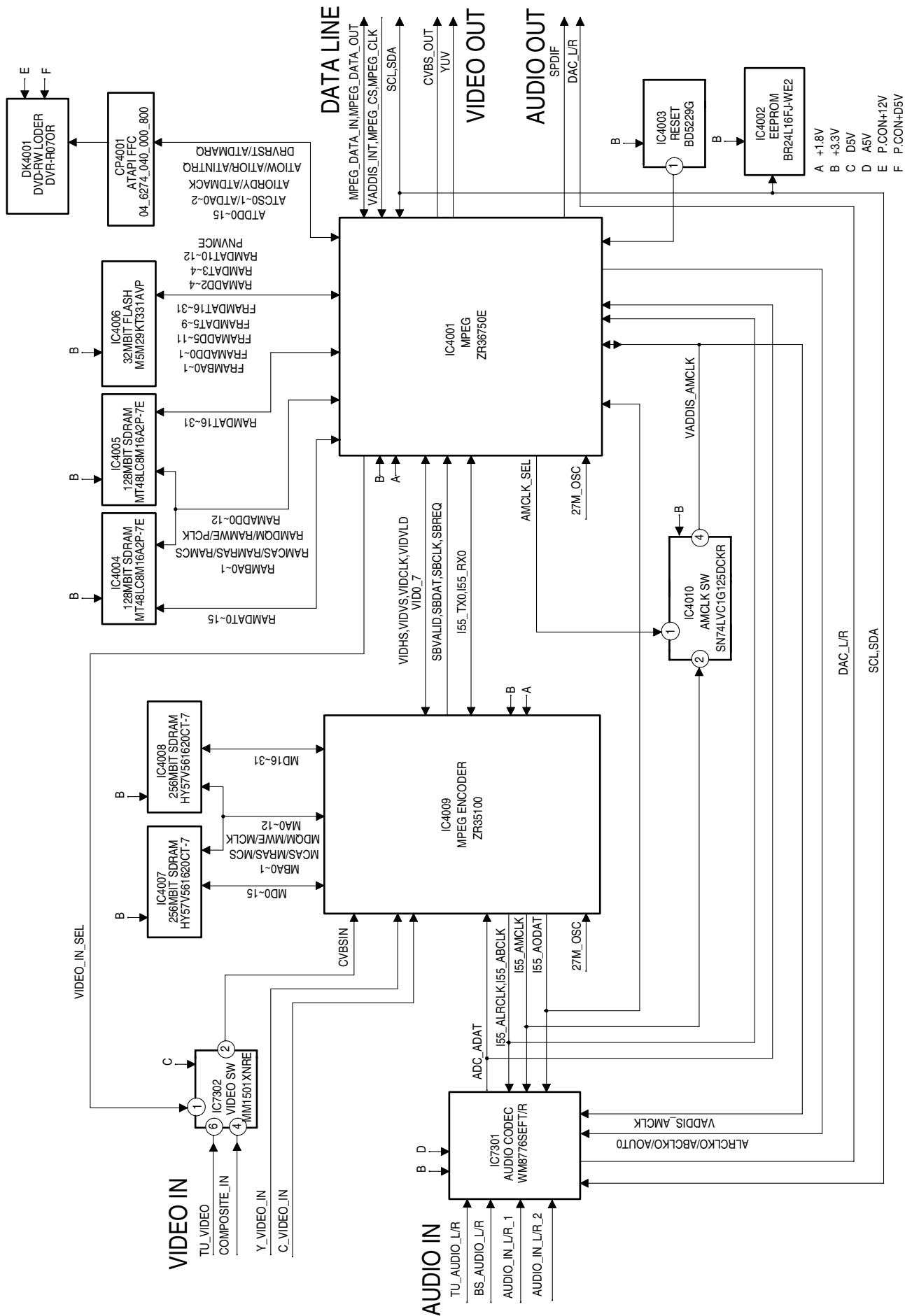
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3.1.1 OVERALL BLOCK DIAGRAM



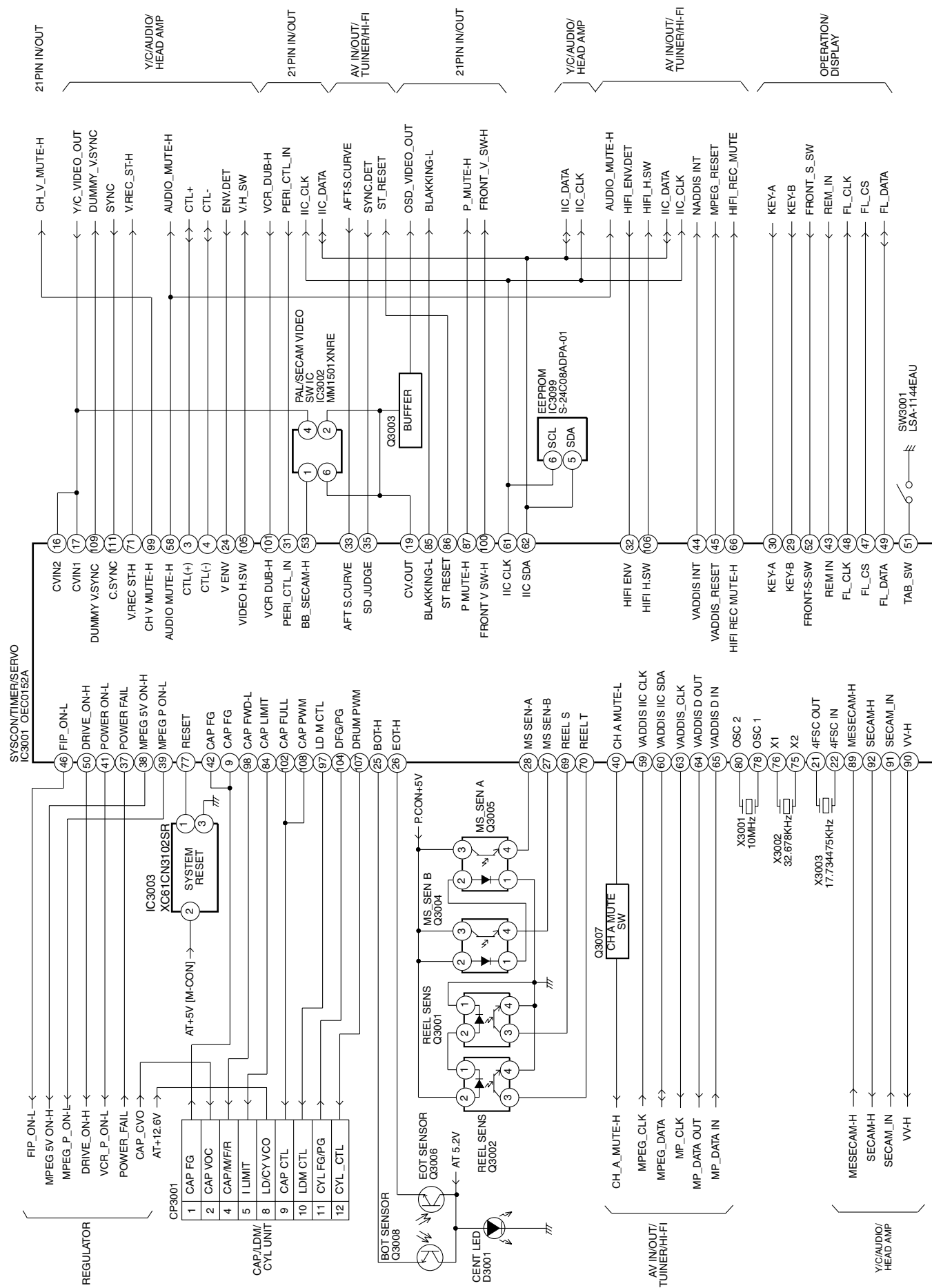
3.1.2 MPEG BLOCK DIAGRAM



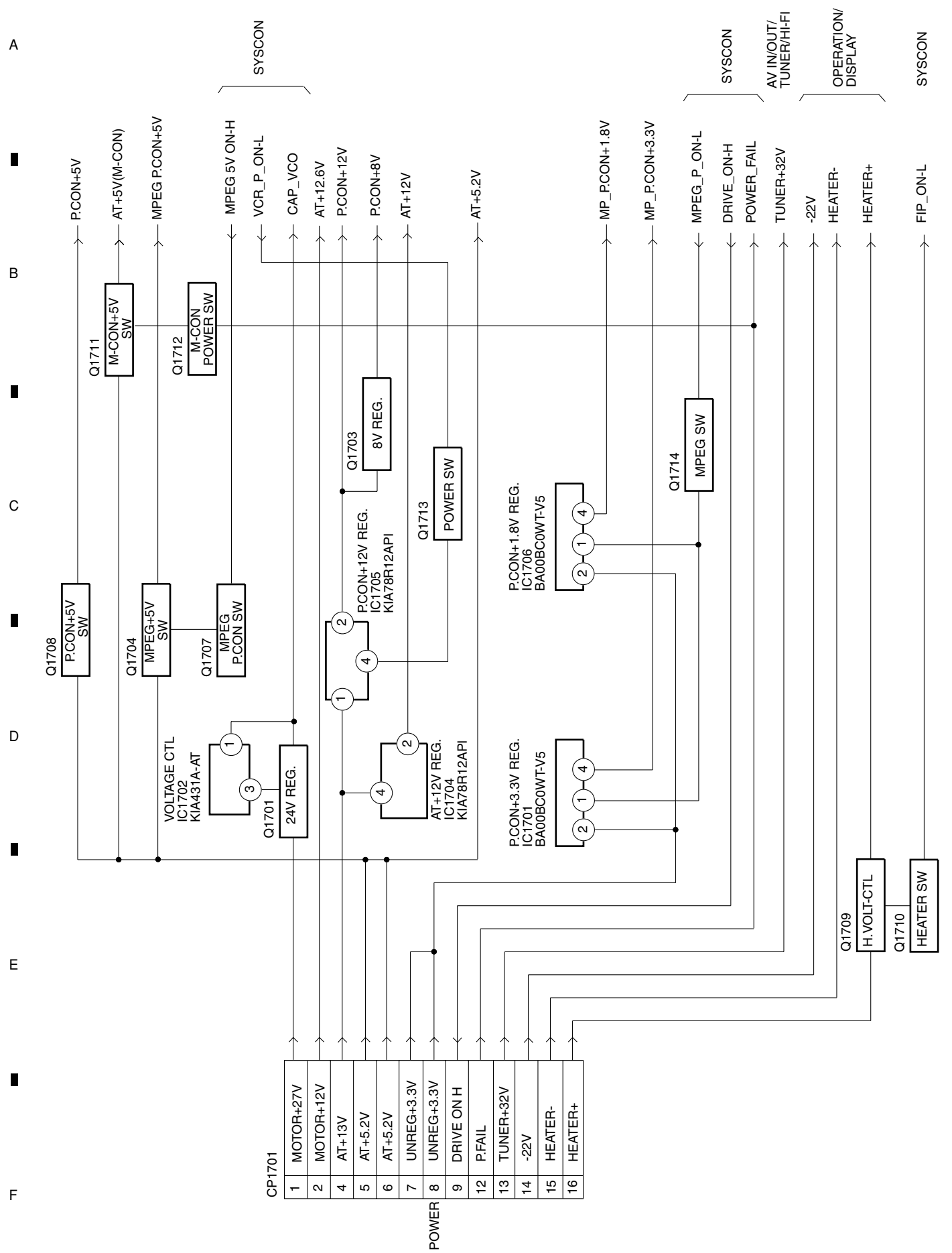
18



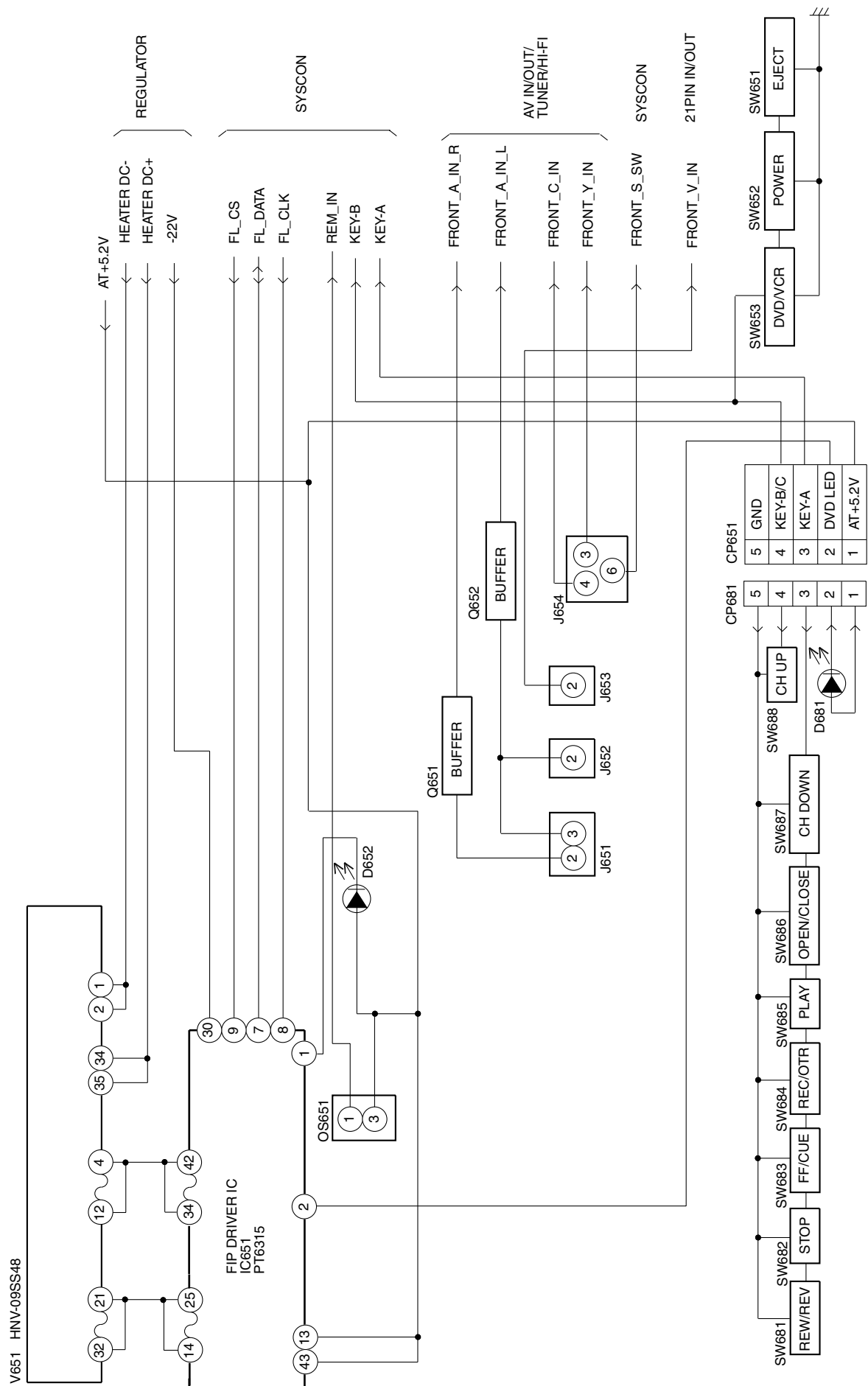
3.1.4 SYSTEM CONTROL BLOCK DIAGRAM



3.1.5 REGULATOR BLOCK DIAGRAM



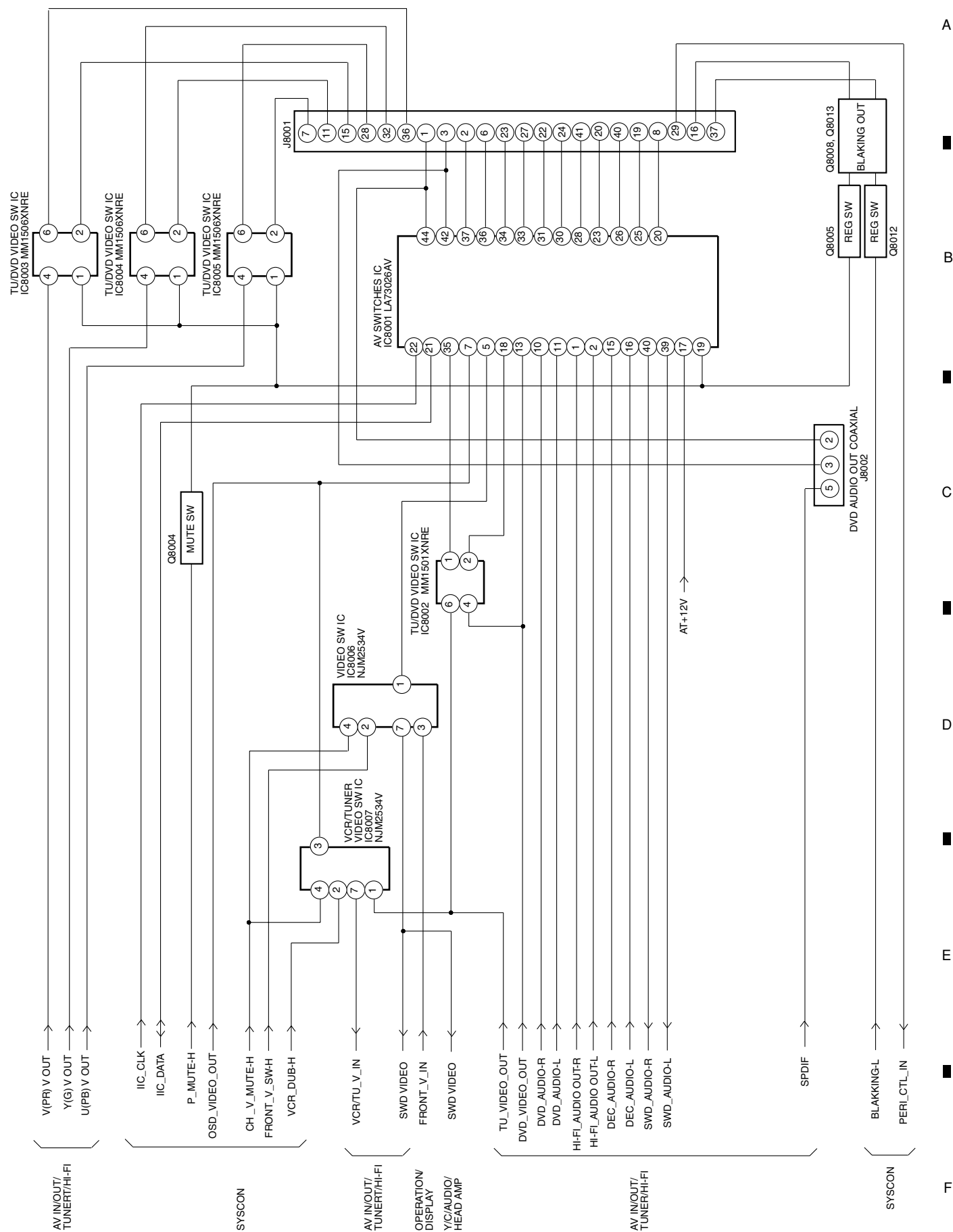
3.1.6 OPERATION / DISPLAY BLOCK DIAGRAM



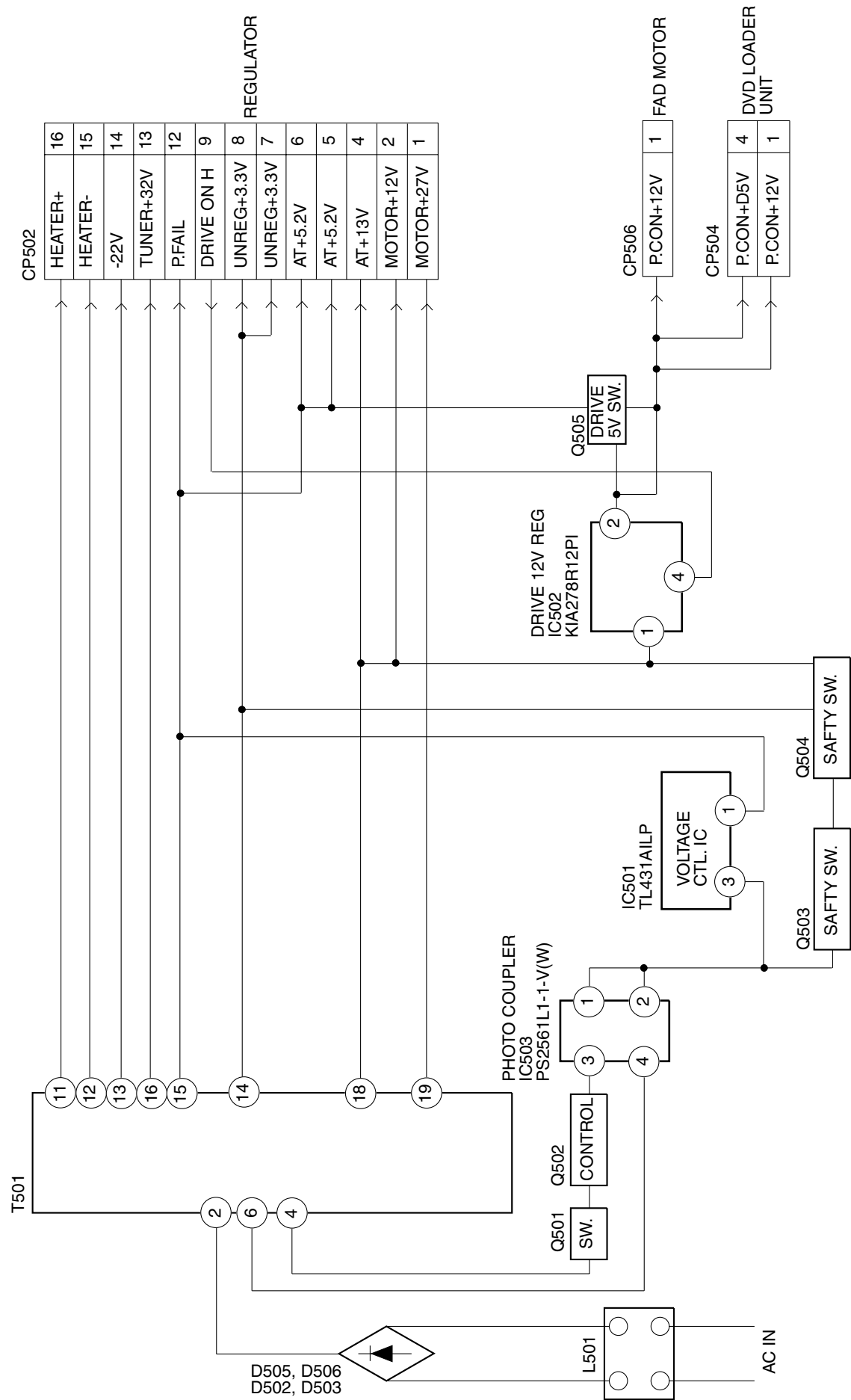
22



3.1.8 21 PIN IN / OUT BLOCK DIAGRAM



3.1.9 POWER BLOCK DIAGRAM



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B

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DVR-RT400-S

4



- F

A1/6 DVD MPEG PCB ASSY (A2E905TB10B)
● AV ENCODER BLOCK

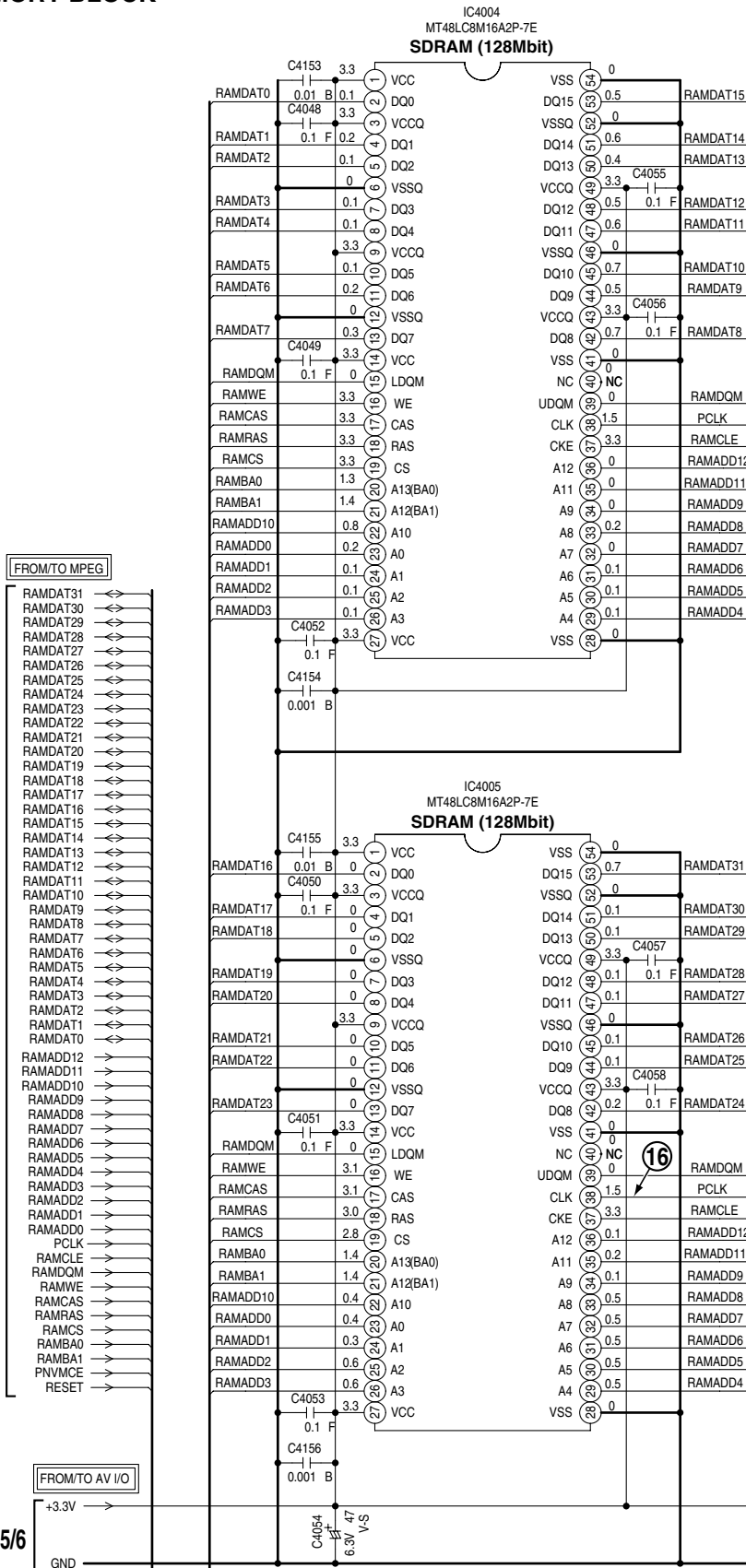


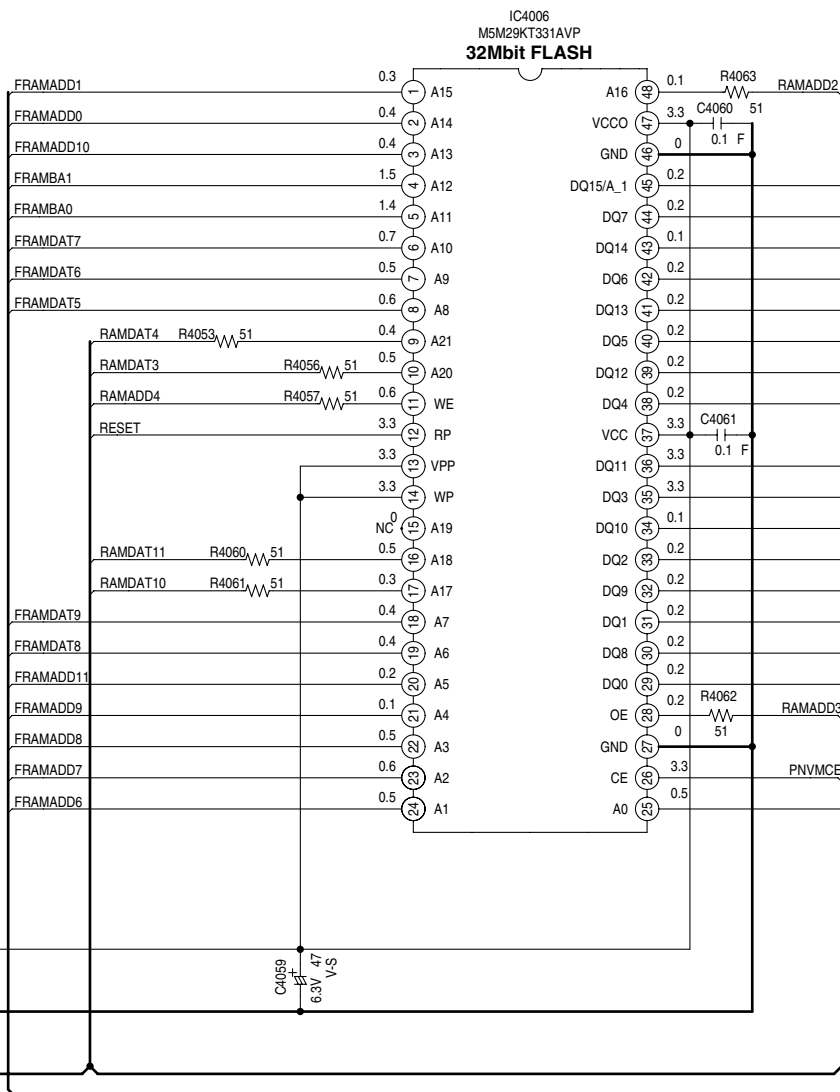
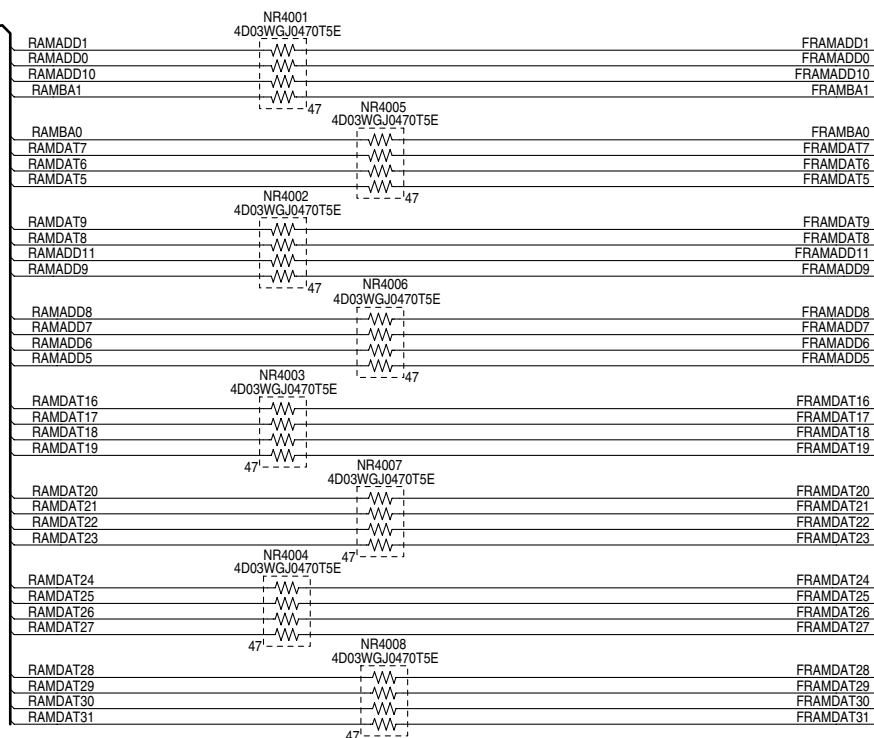




3.5 DVD MPEG PCB ASSY(3/6)

A 3/6 DVD MPEG PCB ASSY
(A2E905TB10B)
● MEMORY BLOCK





1 2 3 4

3.6 DVD MPEG PCB ASSY(4/6)

A **A 4/6** DVD MPEG PCB ASSY
(A2E905TB10B)
● ATAPI BLOCK

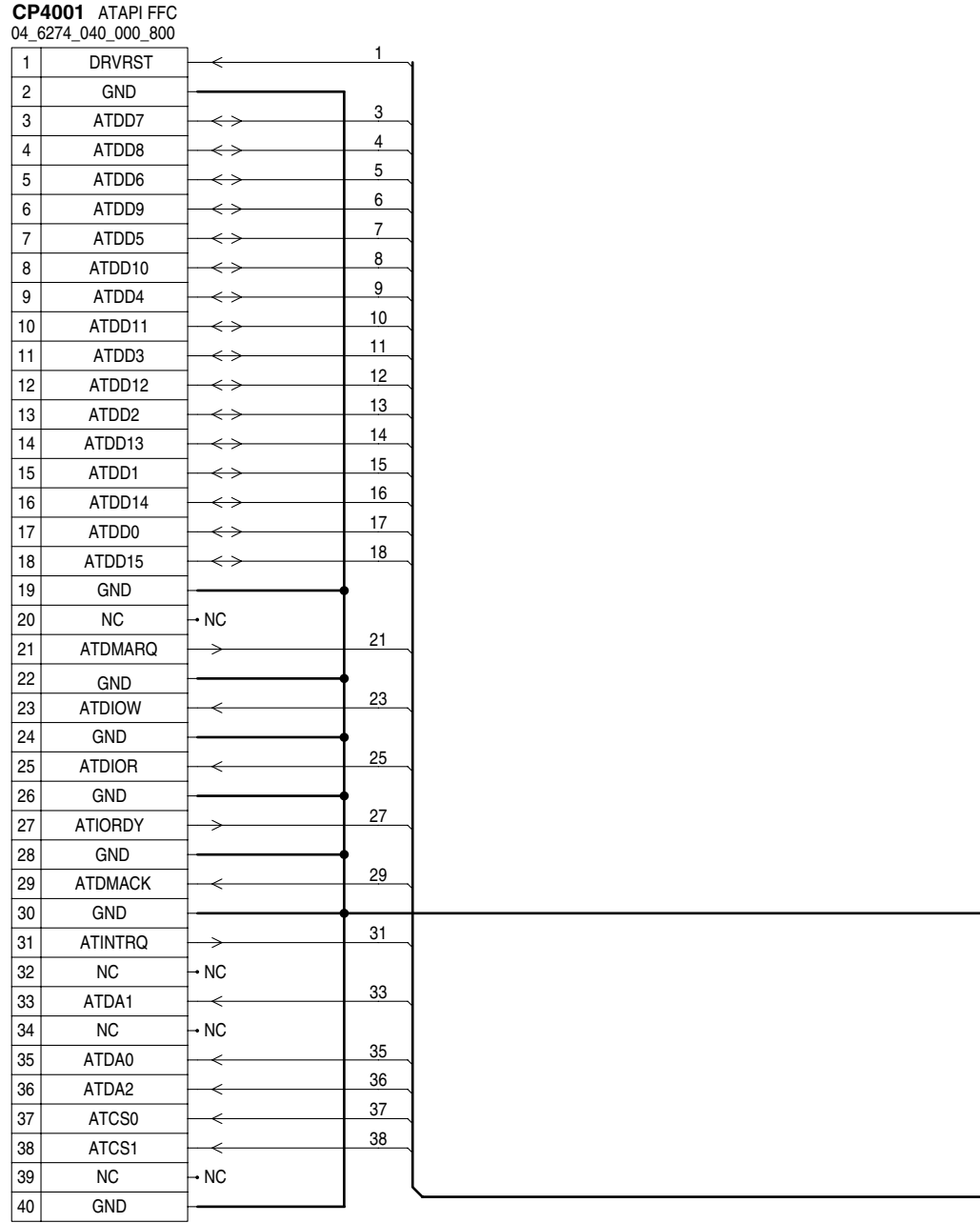
B

C

D

E

F



4

A

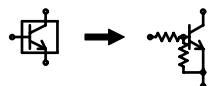
B

C

D

E

F



4

A

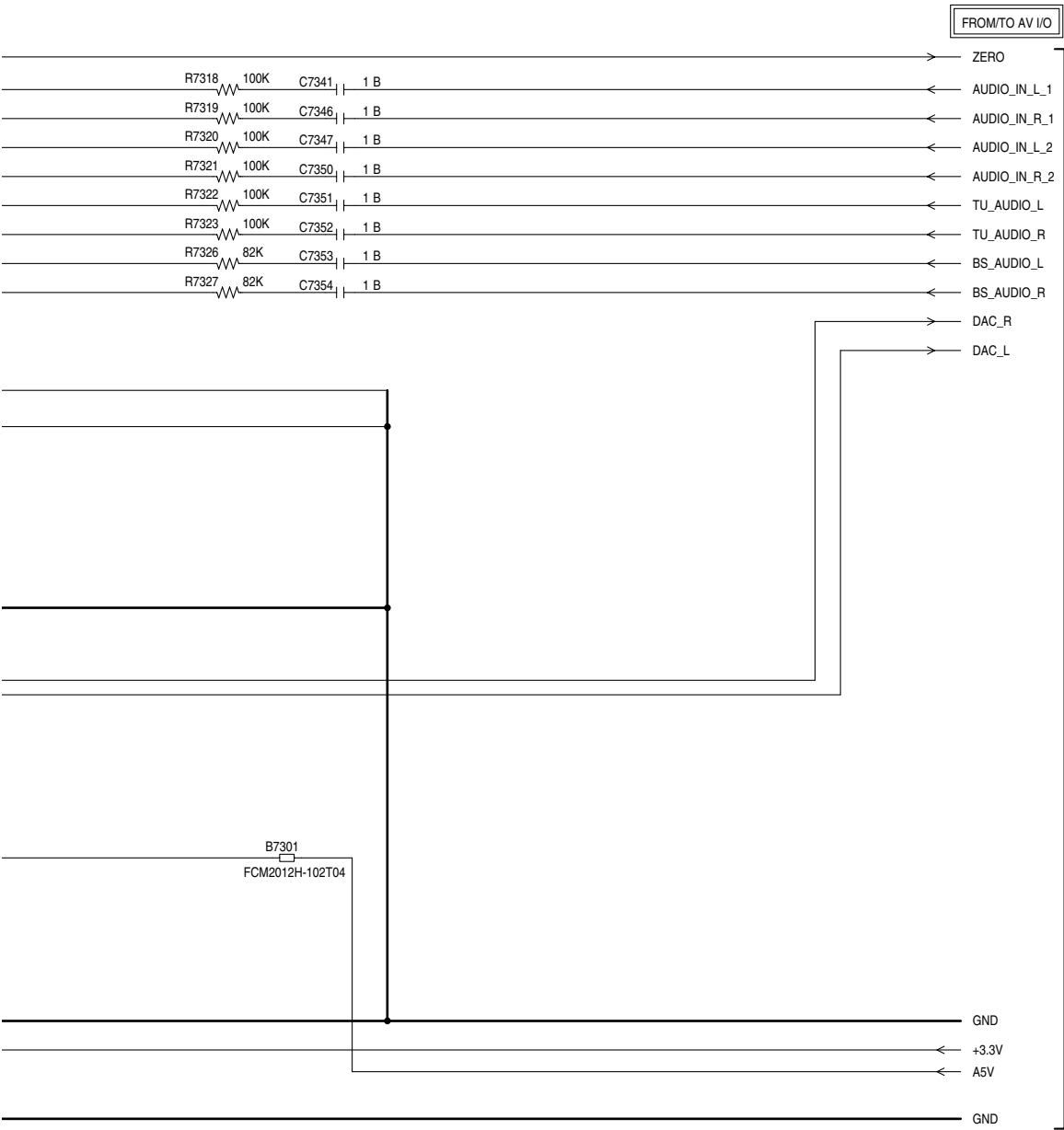
B

C

D

E

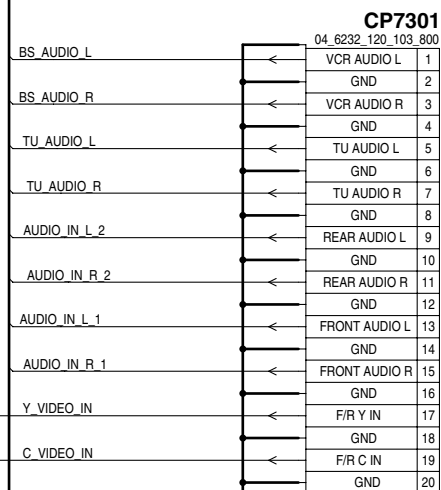
F



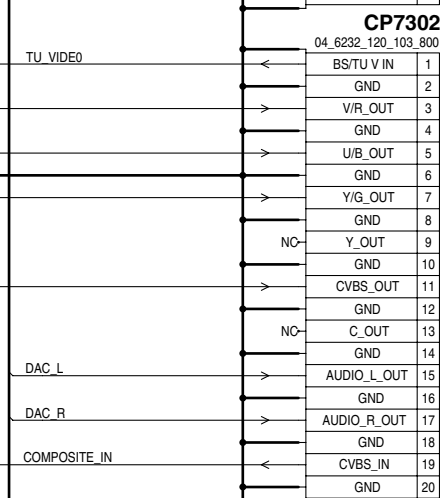
△



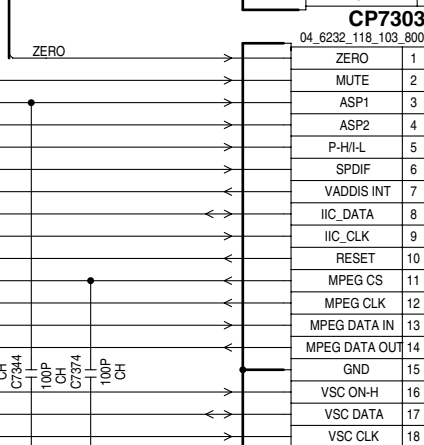
A 6/6 DVD MPEG PCB ASSY
(A2E905TB10B)
• AV IN/OUT BLOCK



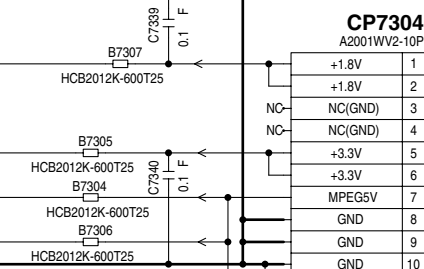
B 3/7
CP8301



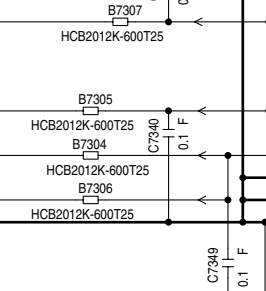
B 3/7
CP8302



B 3/7
CP8303



B 5/7
CP1703



A 6/6

3.9 VCR MT PCB ASSY(1/7)

B1/7

VCR MT PCB ASSY
(A2E905T010B)

• Y/C/AUDIO/HEAD AMP SECAM BLOCK

A

B

C

D

E

F

B 27

B 37

B 47

B 57

B 77

CP101

TOC-C09X-A1

9 HF1 (R)

8 HF COM

7 HF2 (L)

6 SP-CH1 (R)

5 SP COM

4 SP-CH2 (L)

3 EP/LP-CH1 (R)

2 EP/LP COM

1 EP/LP-CH2 (L)

CP102

IMS-A9604S-06C

1 AE HEAD(-)

2 AE HEAD(+)

3 CTL-

4 CTL+

5 AUDIO PB

6 AUDIO REC

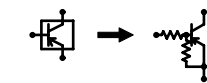
CP103

B2013H02-2P

1 FE HEAD(GND)

2 FE HEAD(HOT)

CAUTION: DIGITAL TRANSISTOR



DVR-RT400-S



3.10 VCR MT PCB ASSY(2/7)

A

B 5/7

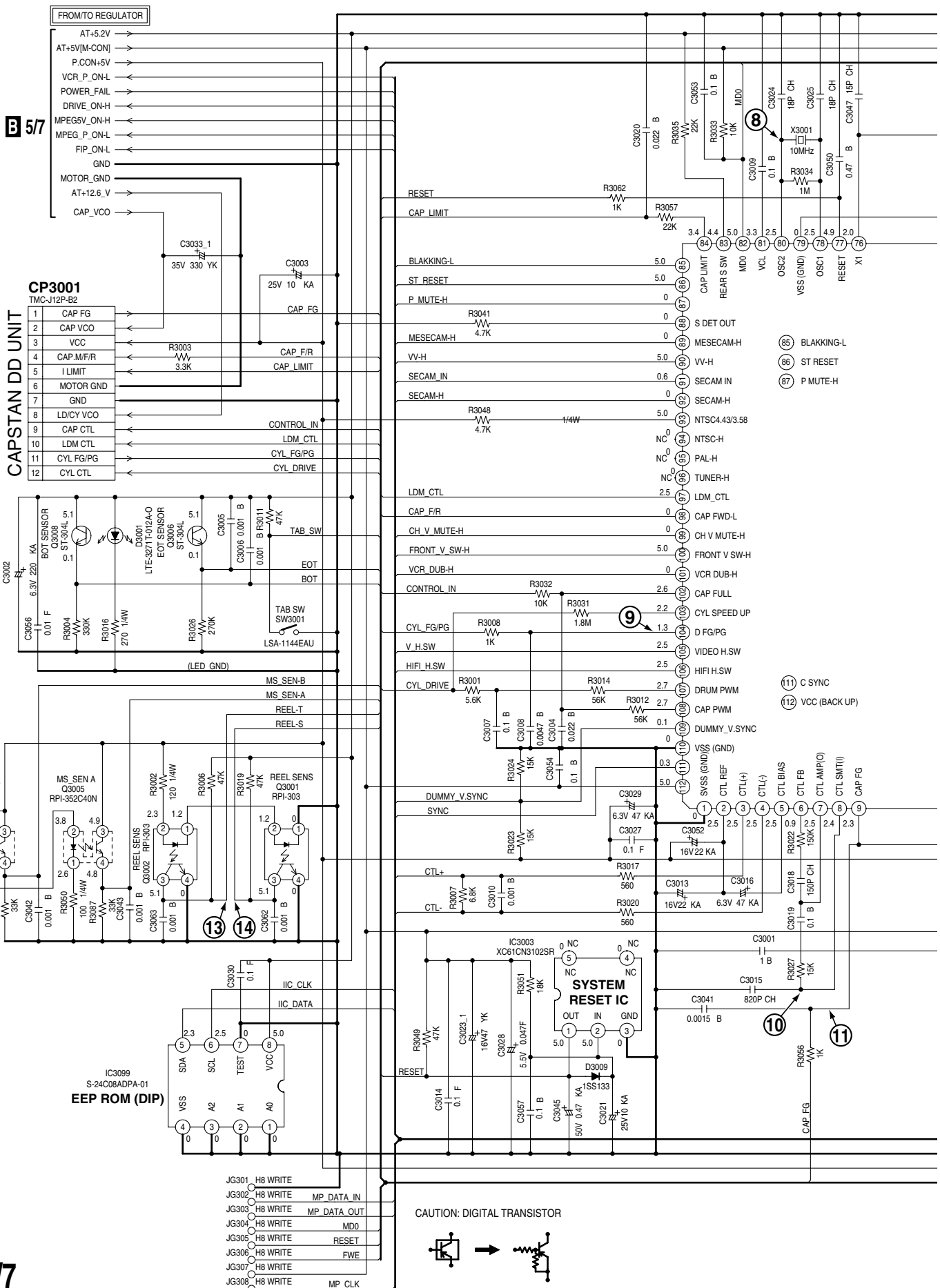
B

C

D

E

F



B 2/7



B 2/7

4



B

C

D

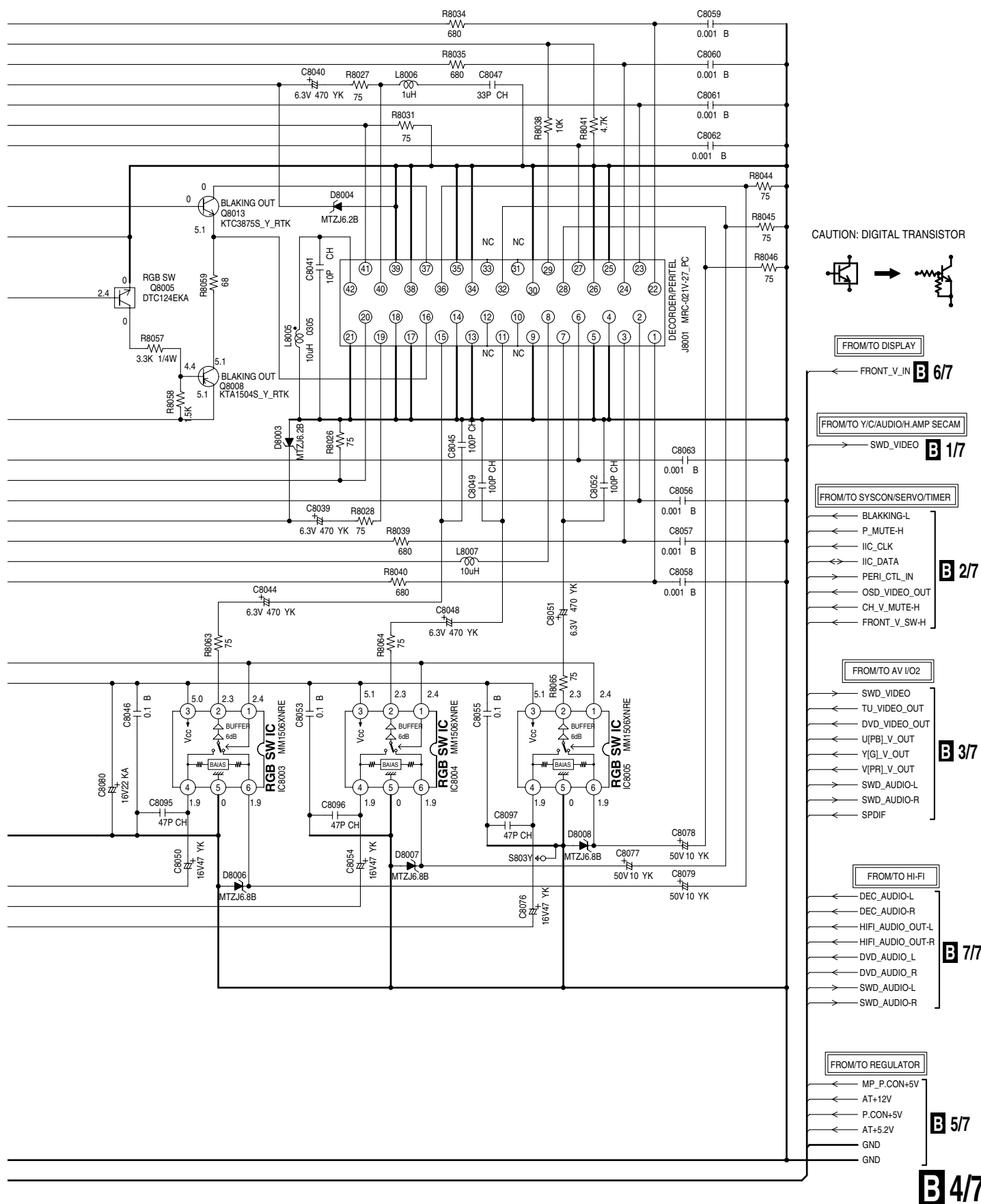
F

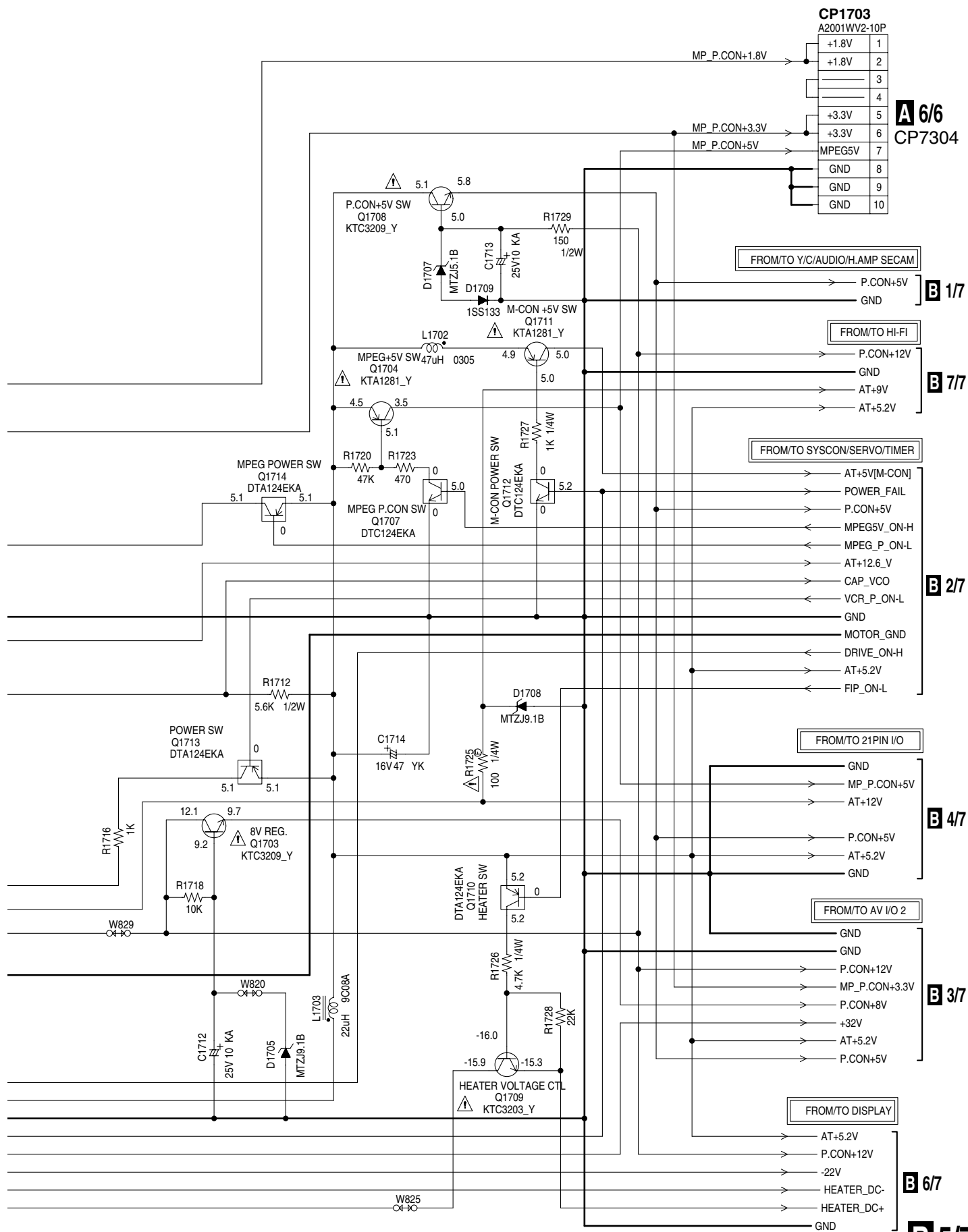
- **AV IN/OUT 2 BLOCK**



● 21 PIN IN/OUT BLOCK



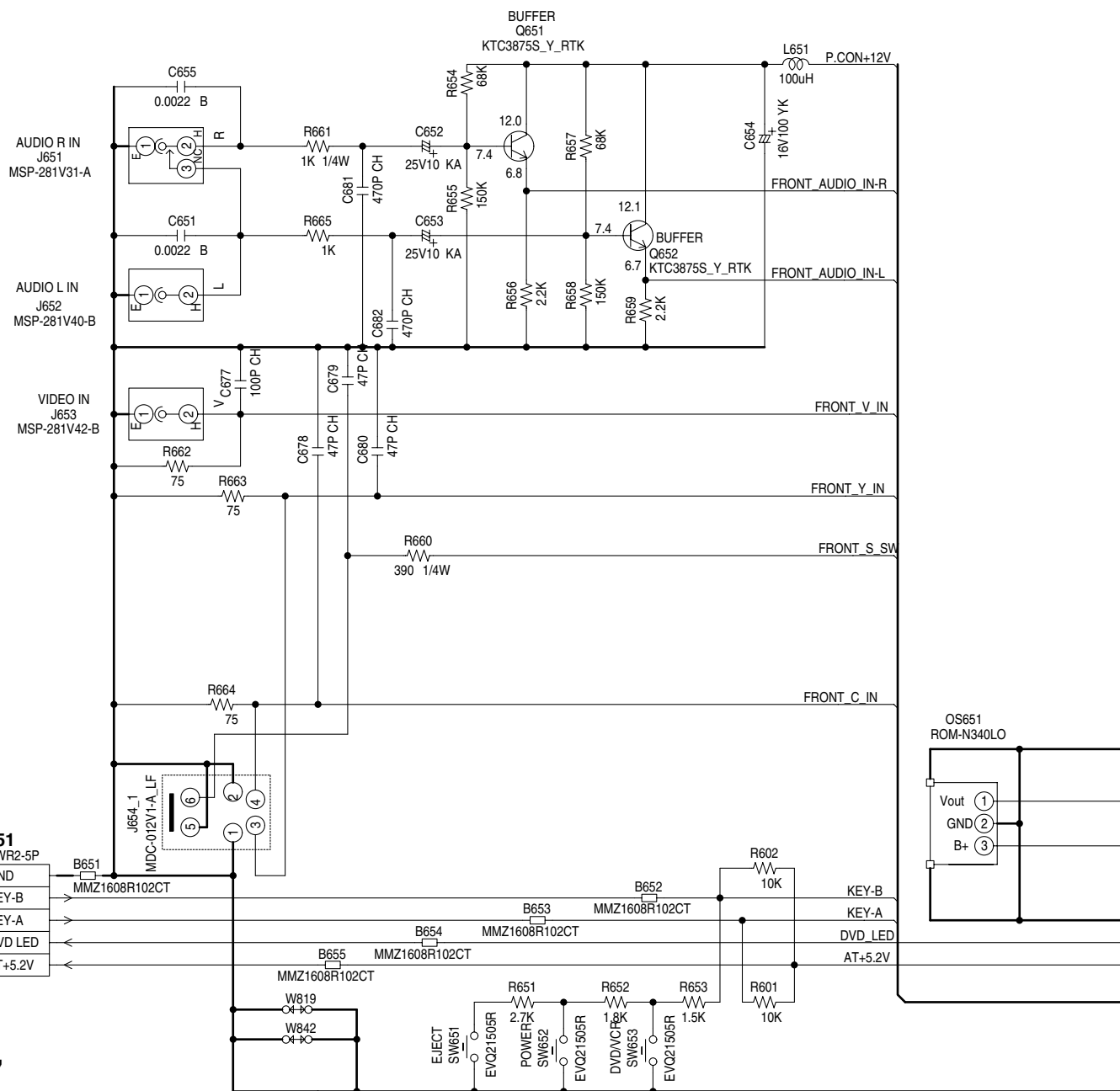




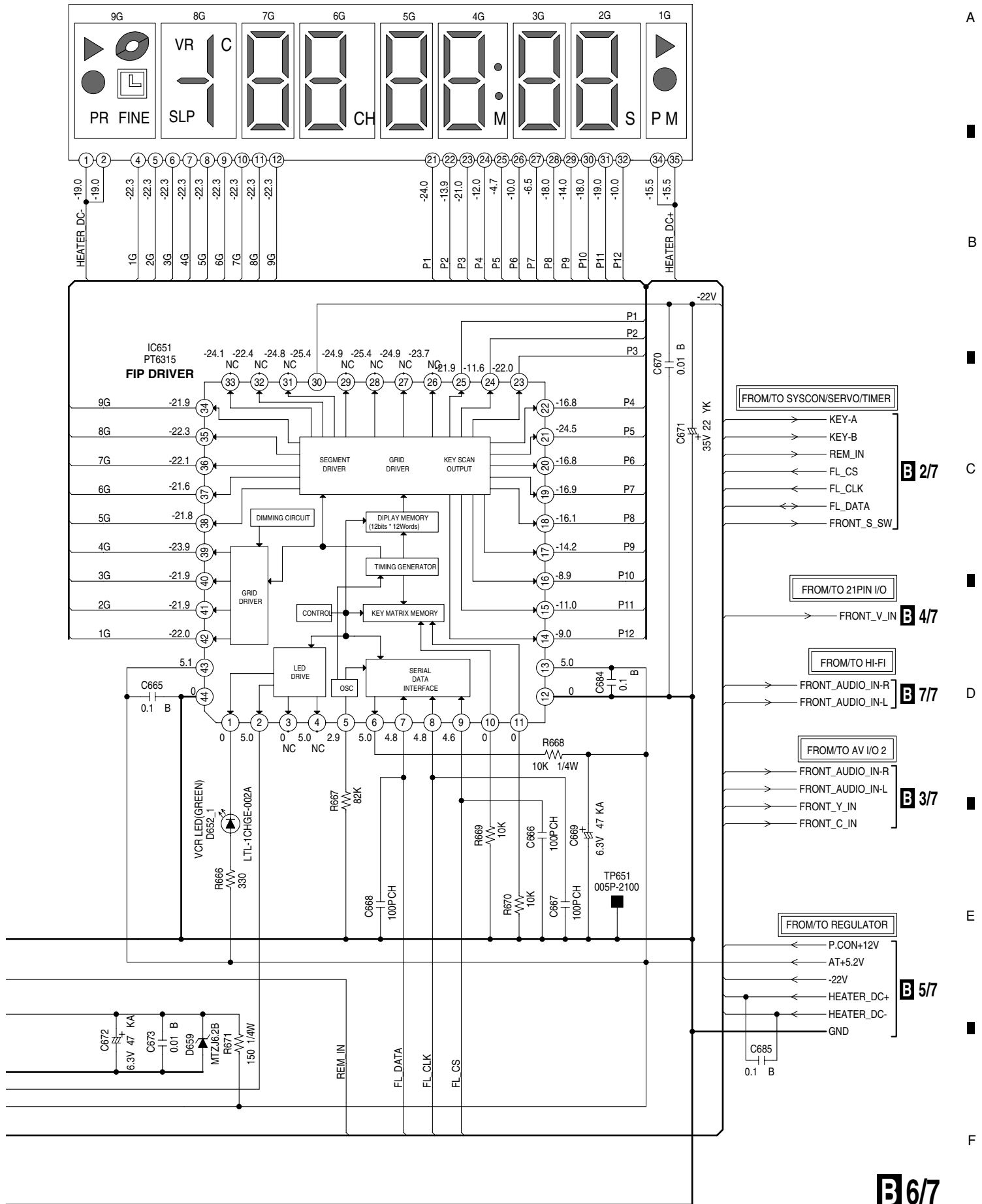
3.14 VCR MT PCB ASSY(6/7)

B 6/7 VCR MT PCB ASSY (A2E905T010B)

● DISPLAY BLOCK



DVR-RT400-S



3.15 VCR MT PCB ASSY(7/7)

B7/7 VCR MT PCB ASSY (A2E905T010B) ● Hi-Fi BLOCK

A

B

C

D

E

F

B 1/7

B 2/7

B 4/7

B 3/7

B 6/7

B 5/7

B7/7

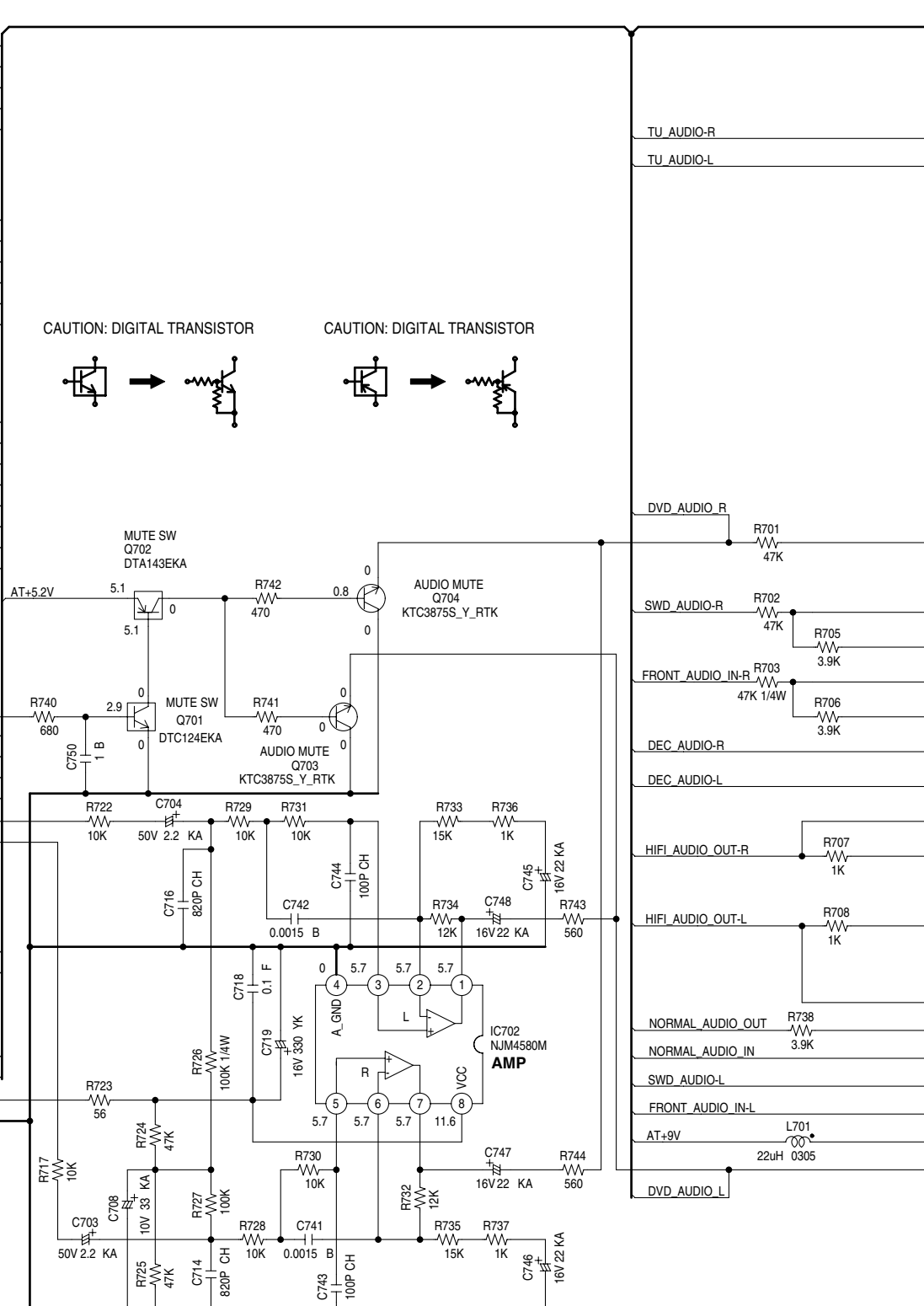
2

3

4

CAUTION: DIGITAL TRANSISTOR

CAUTION: DIGITAL TRANSISTOR



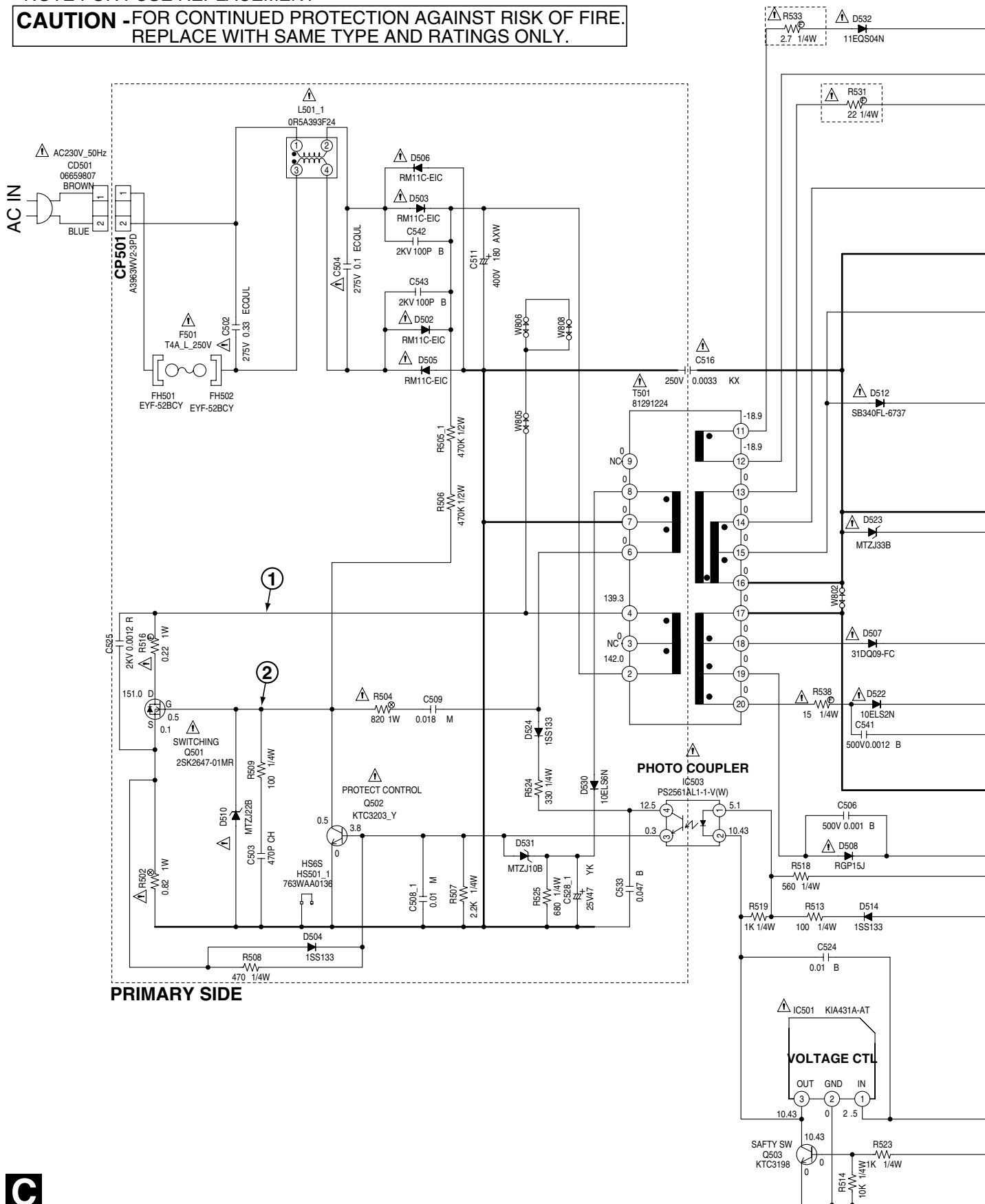


3.16 POWER PCB ASSY

POWER PCB ASSY (A2E905T240B)

• NOTE FOR FUSE REPLACEMENT

CAUTION -FOR CONTINUED PROTECTION AGAINST RISK OF FIRE.
REPLACE WITH SAME TYPE AND RATINGS ONLY.



A



B 5/7
CP1701

C

D

F

F

1 2 3 4

3.17 OPEARTION PCB ASSY

D OPERATION PCB ASSY
(A2E905T270B)

A

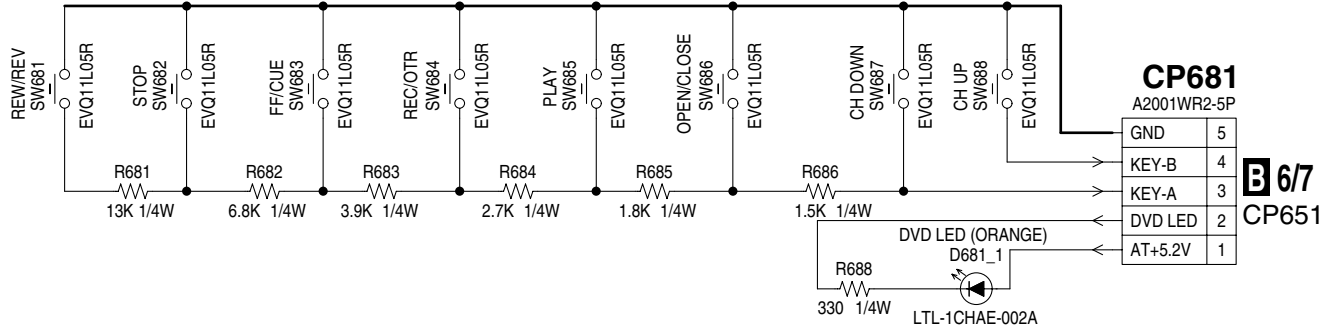
B

C

D

E

F



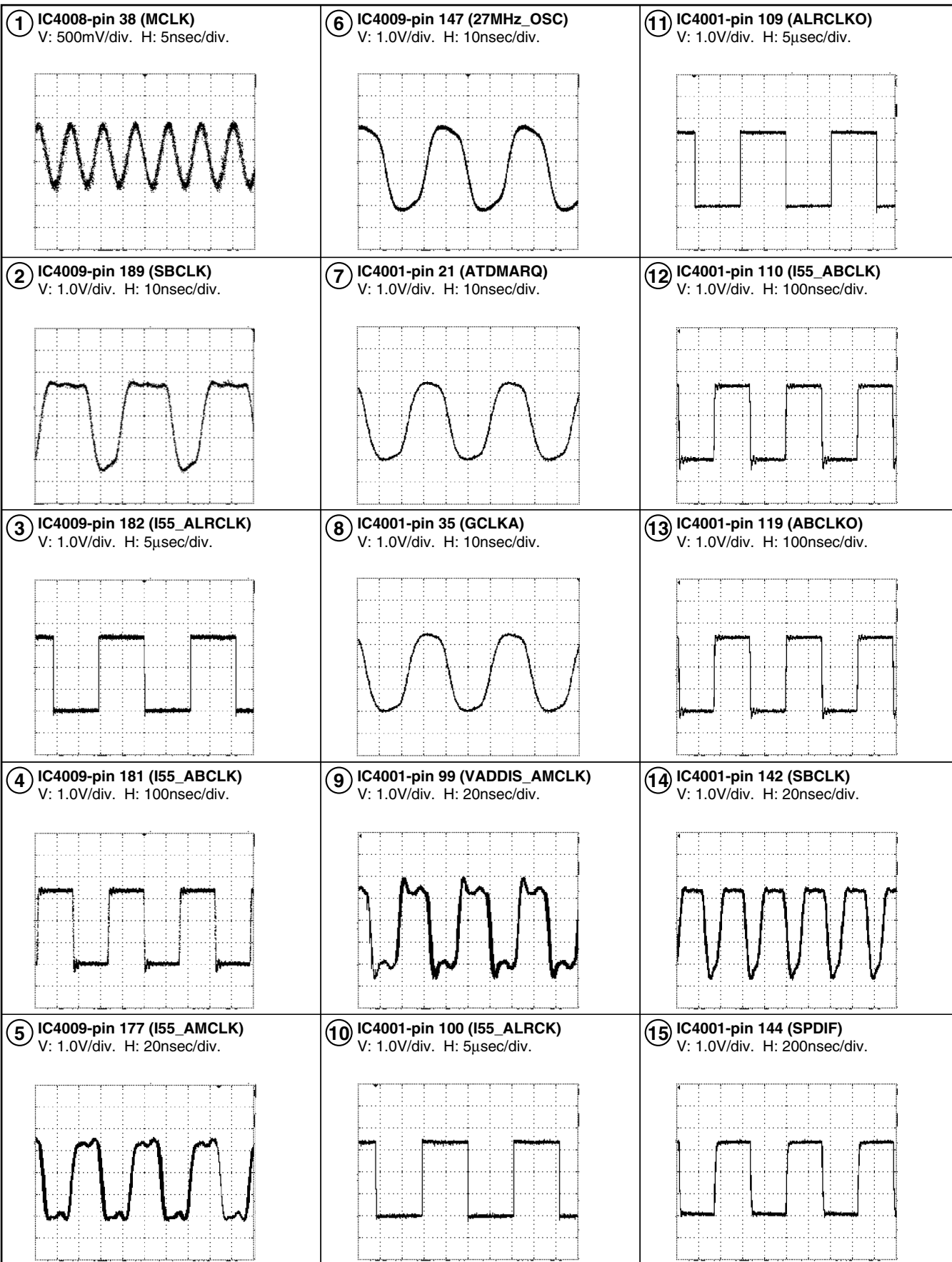
B 6/7
CP651

D

3.18 WAVE FORMS

Note: The encircled numbers denote measuring point in the schematic diagram.

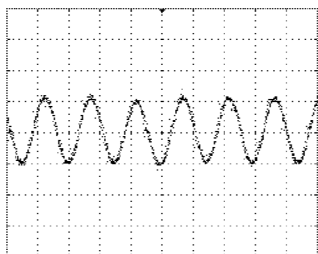
A DVD MPEG PCB ASSY



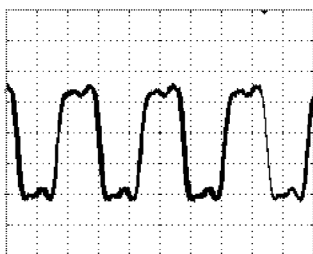
A DVD MPEG PCB ASSY

A

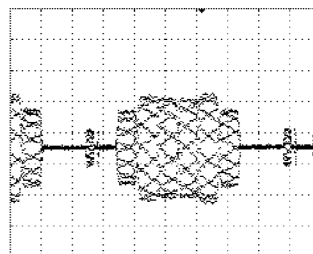
16 IC4005-pin 38 (PCLK)
V: 500mV/div. H: 5nsec/div.



21 IC7301-pin 11 (I55_AMCLK)
V: 1.0V/div. H: 20nsec/div.



26 CP7302-pin 13 (C_OUT)
V: 500mV/div. H: 10μsec/div.

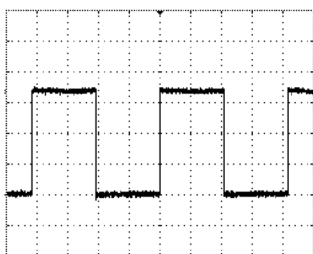


B

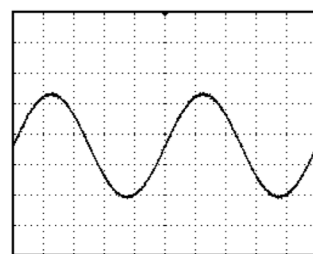
17 IC7301-pin 4 (ABCLKO)
V: 1.0V/div. H: 100nsec/div.



22 IC7301-pin 13 (I55_ALRCLK)
V: 1.0V/div. H: 5μsec/div.

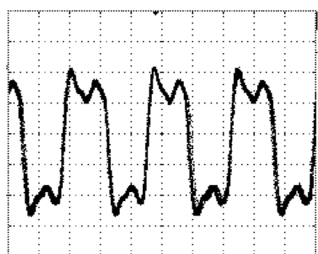


27 CP7301-pin 17 (Y_VIDEO_IN)
V: 200mV/div. H: 10μsec/div.

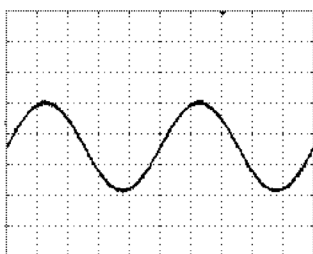


C

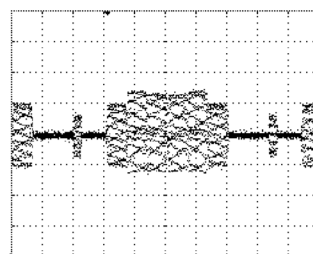
18 IC7301-pin 5 (VADDIS_AMCLK)
V: 1.0V/div. H: 20nsec/div.



23 IC7301-pin 27 (DAC_R)
V: 1.0V/div. H: 200μsec/div.

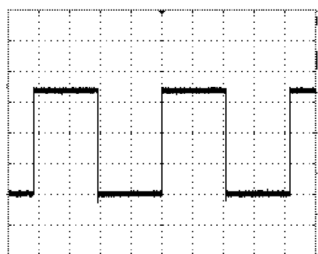


28 CP7301-pin 19 (C_VIDEO_IN)
V: 200mV/div. H: 10μsec/div.

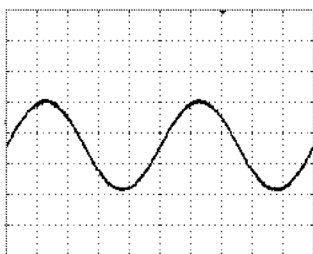


D

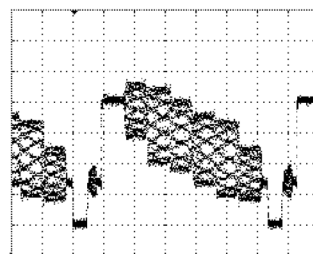
19 IC7301-pin 7 (ALRCLKO)
V: 1.0V/div. H: 5μsec/div.



24 IC7301-pin 26 (DAC_L)
V: 1.0V/div. H: 200μsec/div.

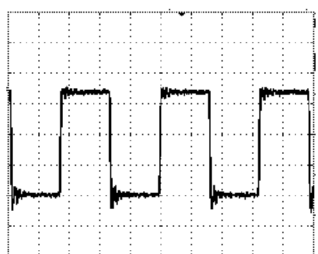


29 IC7302-pin 6 (TU_VIDEO)
V: 200mV/div. H: 10μsec/div.

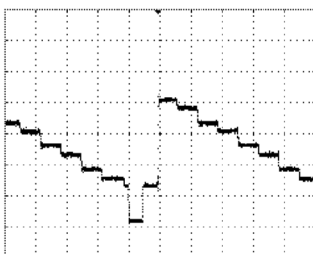


E

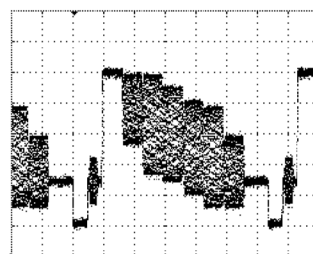
20 IC7301-pin 10 (I55_ABCLK)
V: 1.0V/div. H: 100nsec/div.



25 CP7302-pin 9 (Y_OUT)
V: 500mV/div. H: 10μsec/div.



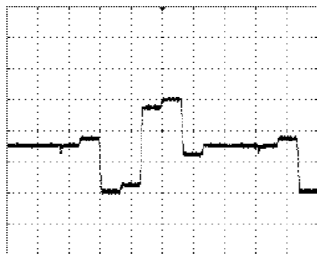
30 IC7302-pin 4 (COMPOSITE_IN)
V: 200mV/div. H: 10μsec/div. EE



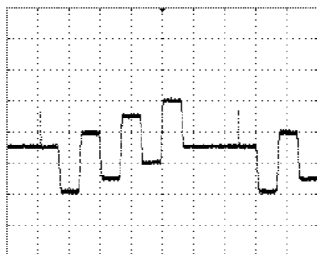
F

A DVD MPEG PCB ASSY

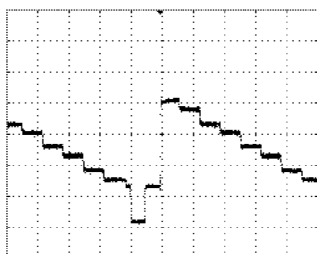
31 CP7302-pin 3 (V/R_OUT)
V: 500mV/div. H: 10μsec/div.



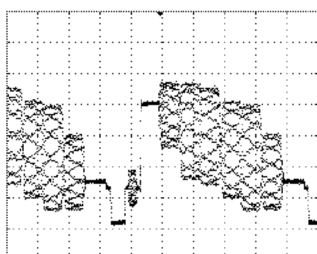
32 CP7302-pin 5 (U/B_OUT)
V: 500mV/div. H: 10μsec/div.



33 CP7302-pin 7 (Y/G_OUT)
V: 500mV/div. H: 10μsec/div.

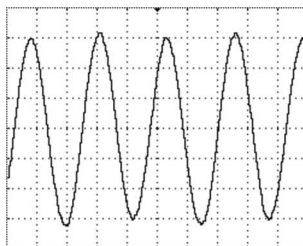


34 CP7302-pin 11 (CVBS_OUT)
V: 500mV/div. H: 10μsec/div.

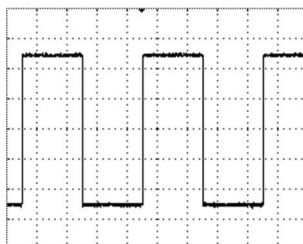


B VCR MT PCB ASSY

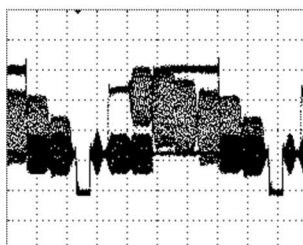
1 IC101-pin 65 VCR STOP
V: 5.0mV/div. H: 50nsec/div.



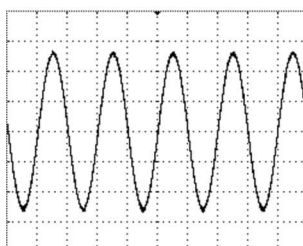
2 TP102 (H. SW) VCR PLAY
V: 100mV/div. H: 10msec/div.



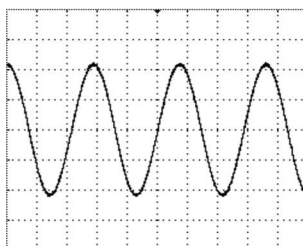
3 Q108 Emitter (Y/C_VIDEO_OUT)
VCR PLAY
V: 50mV/div. H: 10μsec/div.



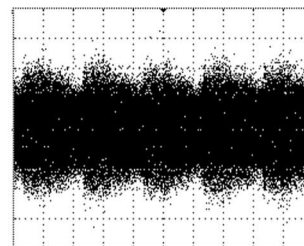
4 C134 -side (NORMAL_AUDIO_OUT)
VCR STOP
V: 20mV/div. H: 500μsec/div.



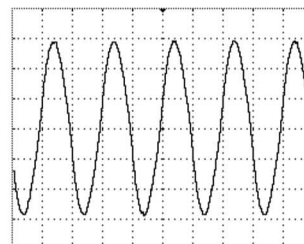
5 CP102-pin 6 (AUDIO REC) VCR REC
V: 1.0V/div. H: 5μsec/div.



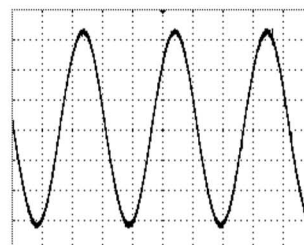
6 TP103 (V. ENV) VCR PLAY
V: 200mV/div. H: 10msec/div.



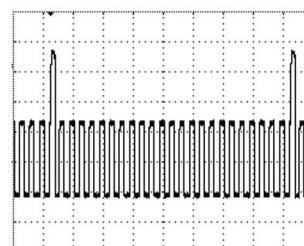
7 IC3001-pin 76 (X1) VCR STOP
V: 50mV/div. H: 50nsec/div.



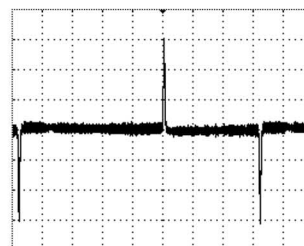
8 IC3001-pin 80 (OSC2) VCR STOP
V: 20mV/div. H: 10μsec/div.



9 IC3001-pin 104 (CYL_FG/PG)
VCR PLAY
V: 100mV/div. H: 5msec/div.

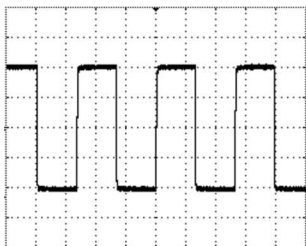


10 IC3001-pin 8 (CTL_SMT(I)) VCR PLAY
V: 50mV/div. H: 5msec/div.

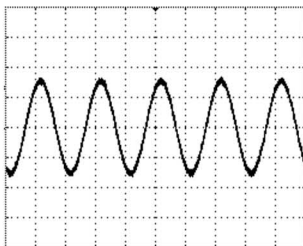


B VCR MT PCB ASSY

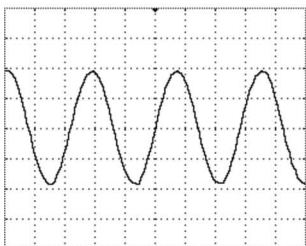
11 IC3001-pin 9 (CAP_FG) VCR PLAY
V: 100mV/div. H: 500μsec/div.



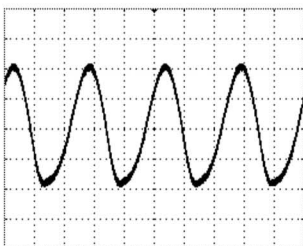
16 CP8301-pin 16 (TU AUDIO L) VCR STOP
V: 50mV/div. H: 50μsec/div.



12 IC3001-pin 22 (4FSCIN/2FSCIN) VCR STOP
V: 50mV/div. H: 20nsec/div.



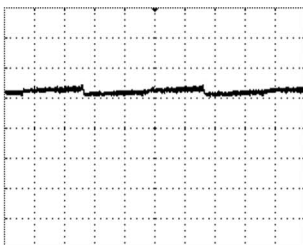
17 CP8301-pin 14 (TU AUDIO R) VCR STOP
V: 50mV/div. H: 200μsec/div.



13 Q3002-pin 3 (REEL_T) VCR PLAY
V: 200mV/div. H: 200msec/div.



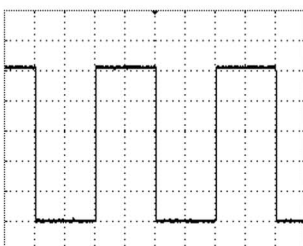
18 IC701-pin 23 (HIFI_ENV. DET) VCR PLAY
V: 100mV/div. H: 10msec/div.



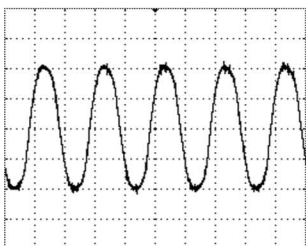
14 Q3001-pin 3 (REEL_S) VCR PLAY
V: 200mV/div. H: 200msec/div.



19 IC701-pin 40 (HIFI_H. SW) VCR PLAY
V: 100mV/div. H: 10msec/div.

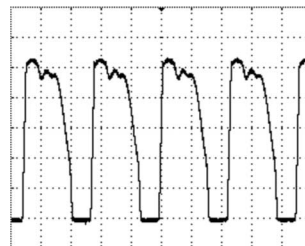


15 IC301-pin 2 VCR STOP
V: 10mV/div. H: 1μsec/div.

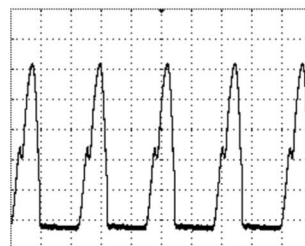


C POWER PCB ASSY

1 Foot of R516 VCR STOP
V: 10V/div. H: 5μsec/div.



2 Q501 Gate VCR STOP
V: 200mV/div. H: 5μsec/div.





5



6



7



8



A



B



C



D



E



F



5



6



7



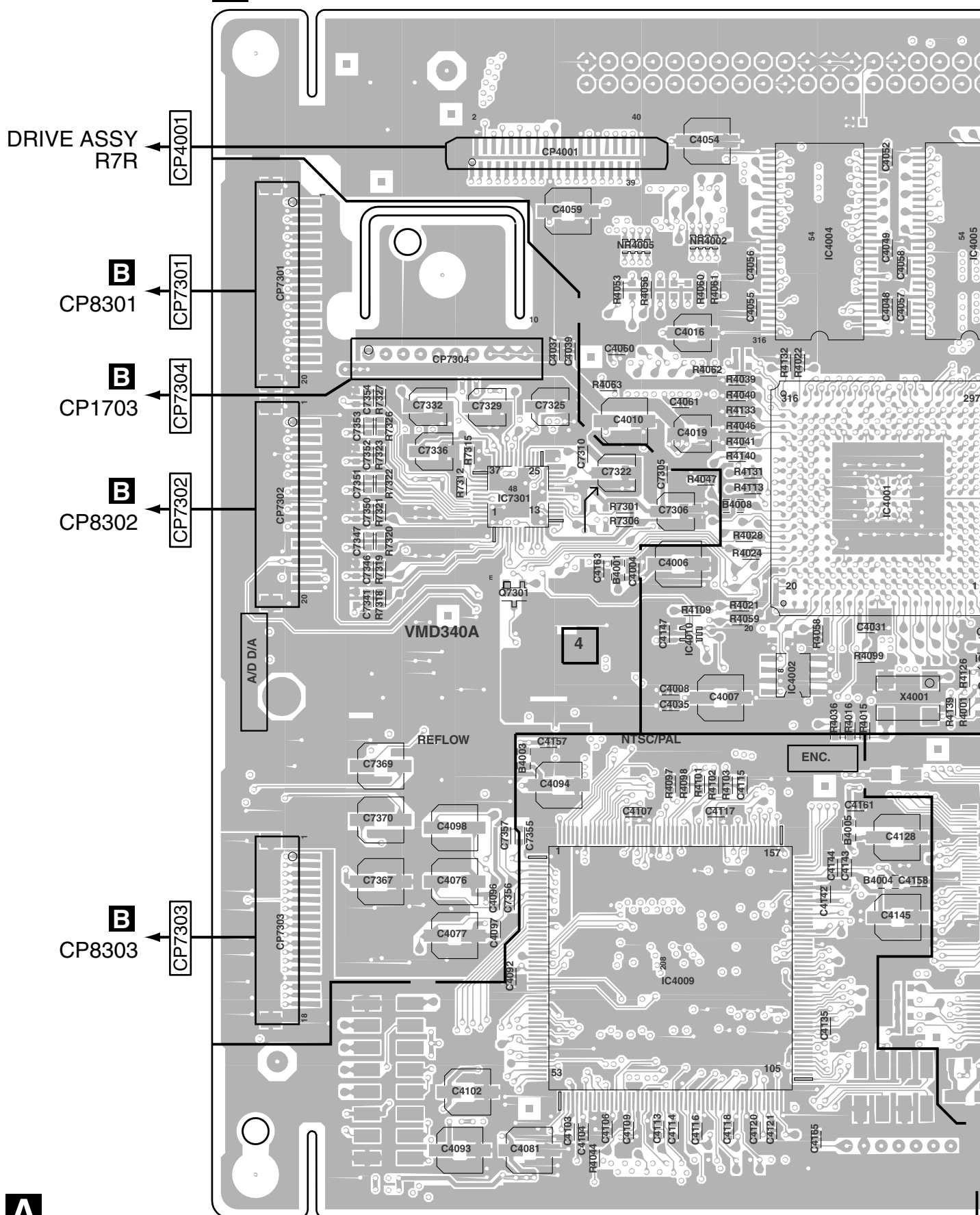
8



DVR-RT400-S

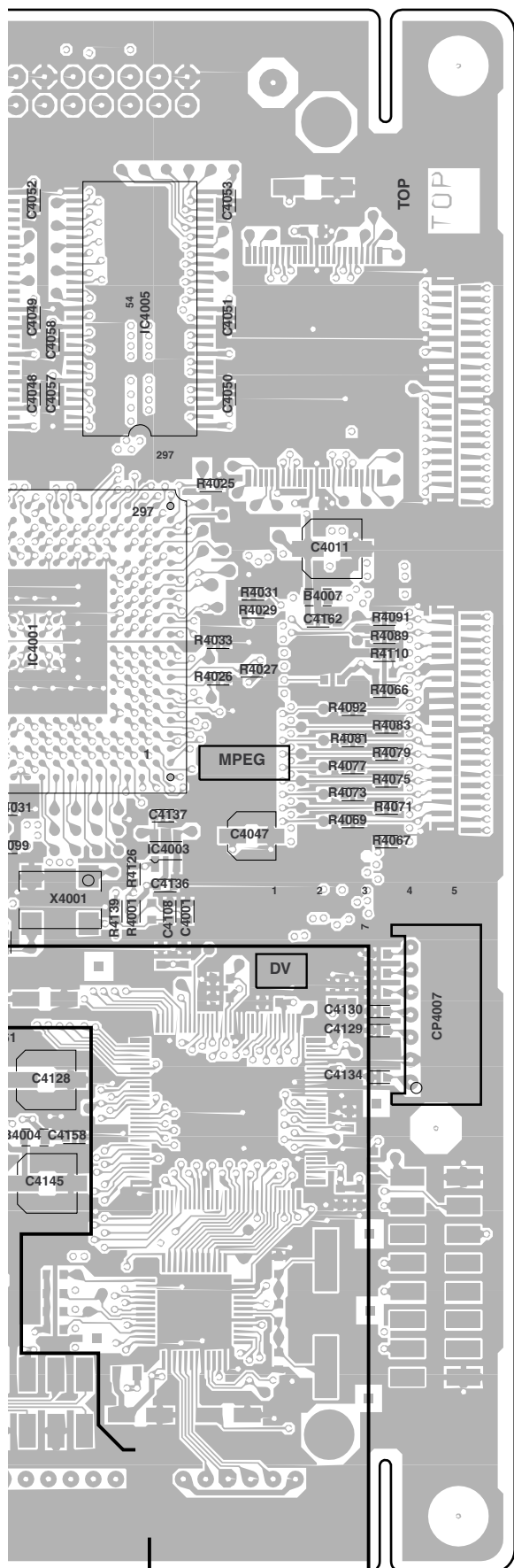
4.1 DVD MPEG PCB ASSY

A DVD MPEG PCB ASSY













SIDE A

A

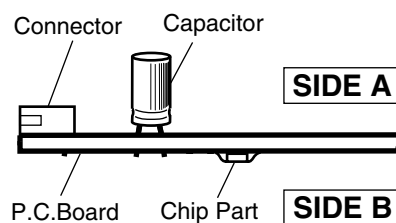


NOTE FOR PCB DIAGRAMS :

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

3. The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



IC4004 IC4005

IC7301 IC4001

Q7301

IC4002 IC4003

IC4009

SIDE B

A DVD MPEG PCB ASSY

IC4006

IC7302

IC4008

IC4007

CP4007

DVR-RT400-S

4.2 VCR MT PCB ASSY

SIDE A • Parts mounted view

B VCR MT PCB ASSY

Q3008

Q3004

Q3005

Q3002

IC3099

Q102

Q1709

Q1701

Q1704

IC1702

IC1704

IC1701

IC1705

Q1703

Q1708

IC1706

IC301

Q3006

CP681

CP651

CP8303

CP7303

CP7302

CP8302

DVR-RT400-S

A



C

[

E

1

67

SIDE A • Chip-parts mounted view

B VCR MT PCB ASSY

A

B

C

D

E

F

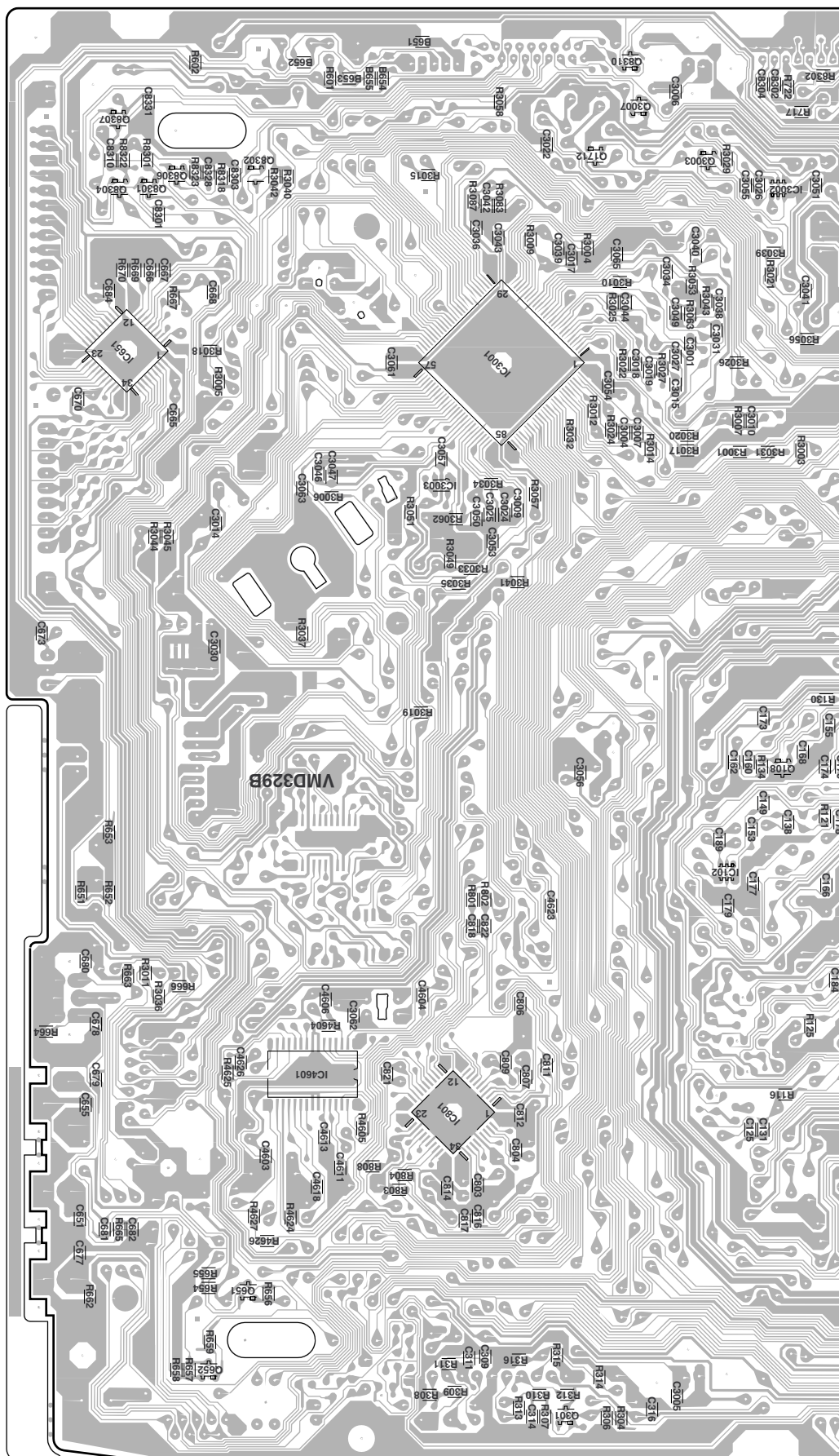
SIDE A

- **Chip-parts mounted view**

B

VCR MT PCB ASSY

Q8310	
Q3007	IC8001
Q3003	IC702
Q8305	Q8303
	IC8002
	Q8005
Q8008	Q8013
Q8004	Q8012
IC8004	IC8003
Q1713	
Q1714	Q8011
	Q1710
Q701	
Q702	Q1707
	Q703
IC701	Q704
Q651	
Q652	
Q301	Q302



SIDE A

B CP1701 DRIVE ASSY R7R FAN MOTOR



RISK OF FIRE - REPLACE AS MARKED

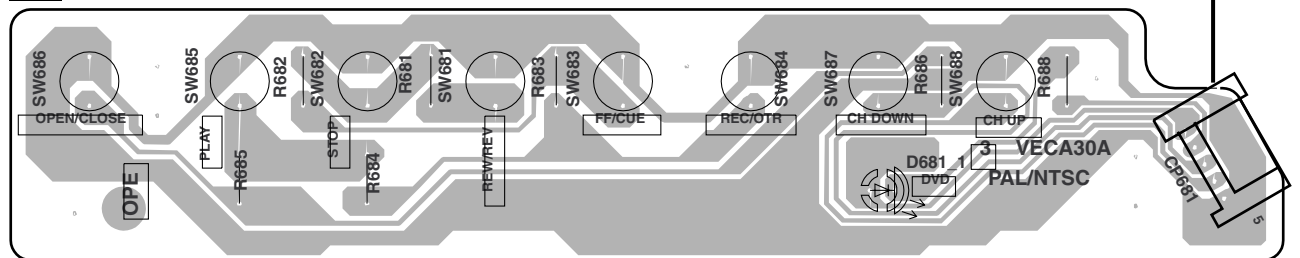
DVR-RT400-S

4.4 OPERATION PCB ASSY

SIDE A

SIDE A

D OPERATION PCB ASSY



D

D

5. PCB PARTS LIST

NOTES: ●Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
●The Δ mark found on some component parts indicates the importance of the safety factor of the part.
Therefore, when replacing, be sure to use parts of identical designation.
●When ordering resistors, first convert resistance values into code form as shown in the following examples.
Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).
560 Ω \rightarrow 56 x 10¹ \rightarrow 561 RD1/4PU561J
47k Ω \rightarrow 47 x 10³ \rightarrow 473 RD1/4PU473J
0.5 Ω \rightarrow R50 RN2H R50K
1 Ω \rightarrow 1R0 RS1P 1R0K
Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
5.62k Ω \rightarrow 562 x 10¹ \rightarrow 5621 RN1/4PC5621F

Mark No.	Description	Part No.	Mark No.	Description	Part No.
LIST OF ASSEMBLIES			IC8007	IC NJM2534V(Te2)	I0QF02534V
1..DVD MPEG PCB ASSY	A2E905TB10B		Q101	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
1..VCR MT PCB ASSY	A2E905T010B				
1..POWER PCB SUPPLY ASSY	A2E905T240B		Q102	TRANSISTOR,SILICON KTC3203_Y_AT	TCAT032034
			Q103	COMPOUND TRANSISTOR DTA124EKAT146	TPYJC05001
1..OPERATION PCB ASSY	A2E905T270B		Q104	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
			Q105	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
			Q108	TRANSISTOR,SILICON KTA1504S_Y_RTK	TAAA1504SY
SEMICONDUCTORS			Q301	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
IC101	IC HA118225F	I04F38225F	Q651	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
IC102	IC MM1501XNRE	I0UF015010	Q652	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
IC301	IC LA7210	I03S072100	Q701	COMPOUND TRANSISTOR DTC124EKAT146	TNYJC05001
			Q702	COMPOUND TRANSISTOR DTA143EKAT146	TPYJA05001
IC651	IC PT6315	IF4K063150	Q703	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
IC701	IC LA72646SM-MPB	I03F7646SM	Q704	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
IC702	IC NJM4580M(Te1)	I0QJ045800	Δ Q1701	TRANSISTOR,SILICON KTD1691Y	TDA0016910
IC801	IC MSP3417G-QG-B8	I19FF34170	Δ Q1703	TRANSISTOR,SILICON KTC3209_YAT	TCAT03209Y
Δ IC1701	IC BA00BC0WT-V5	I07F90WTP0	Q1704	TRANSISTOR,SILICON KTA1281_Y	TAAT01281Y
Δ IC1702	IC KIA431A-AT	I1KJ9A431A	Q1707	COMPOUND TRANSISTOR DTA124EKAT146	TPYJA05001
Δ IC1704	IC KIA78R12API	I1KA98R12A	Q1708	TRANSISTOR,SILICON KTC3209_YAT	TCAT03209Y
Δ IC1705	IC KIA78R12API	I1KA98R12A	Q1709	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
Δ IC1706	IC BA00BC0WT-V5	I07F90WTP0	Q1710	COMPOUND TRANSISTOR DTA143EKAT146	TPYJA05001
			Q1711	TRANSISTOR,SILICON KTA1281_Y	TAAT01281Y
IC3001	IC OEC0152A	I54F50152A	Q1712	COMPOUND TRANSISTOR DTC143EKAT146	TNYJC05001
IC3002	IC MM1501XNRE	I0UF015010	Q1713	COMPOUND TRANSISTOR DTA143EKAT146	TPYJA05001
IC3003	IC XC61CN3102SR	IE2F031020	Q1714	COMPOUND TRANSISTOR DTA143EKAT146	TPYJA05001
NSPIC3099	MEMORY DATA S-24C08ADPA-01	S2E905TE01	Q3001	PHOTO COUPLER RPI-303	2700690
IC4001	IC ZR36750E	ICQM067500	Q3002	PHOTO COUPLER RPI-303	2700690
IC4002	MEMORY DATA BR24L16FJ-WE2	S2E905TE02	Q3003	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
IC4003	IC BD5229G-TR	I97F052290	Q3004	PHOTO COUPLER RPI-352C40N	2700680
IC4004	IC MT48LC8M16A2P-7E	IF6J08M167	Q3005	PHOTO COUPLER RPI-352C40N	2700680
IC4005	IC MT48LC8M16A2P-7E	IF6J08M167	Q3006	PHOTO TRANSISTOR ST-304L	0000M00390
IC4006	MEMORY DATA M5M29KT331AVP	S2E904TF02	Q3007	COMPOUND TRANSISTOR DTA143EKAT146	TPYJA05001
IC4007	IC HY57V561620CT-7	ICLJ020CT7	Q3008	PHOTO TRANSISTOR ST-304L	0000M00390
IC4008	IC HY57V561620CT-7	ICLJ020CT7	Q7301	COMPOUND TRANSISTOR KRC103SR TK	TNAAC05002
IC4009	IC ZR35100	ICQK051000	Q8004	COMPOUND TRANSISTOR DTC143EKAT146	TNYJC05001
IC4010	IC SN74LVC1G125DCKR	I5CJ0G1250	Q8005	COMPOUND TRANSISTOR DTC143EKAT146	TNYJC05001
IC4601	IC LA70100M-MPB	I03F00100M	Q8008	TRANSISTOR,SILICON KTA1504S_Y_RTK	TAAA1504SY
IC7301	IC WM8776SEFT/R	IFJK087760	Q8011	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
IC7302	IC MM1501XNRE	I0UF015010	Q8012	COMPOUND TRANSISTOR DTC124EKAT146	TNYJC05001
IC8001	IC LA73026AV-TLM-E	I03F0026A0	Q8013	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
IC8002	IC MM1501XNRE	I0UF015010	Q8301	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
IC8003	IC MM1506XNRE	I0UF015060	Q8302	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
IC8004	IC MM1506XNRE	I0UF015060	Q8303	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
IC8005	IC MM1506XNRE	I0UF015060	Q8304	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
IC8006	IC NJM2534V(Te2)	I0QF02534V	Q8305	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
			Q8306	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY

Mark No.	Description	Part No.
Q8307	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
Q8310	COMPOUND TRANSISTOR DTA124EKAT146	TPYJC05001
Q8312	COMPOUND TRANSISTOR DTA124EKAT146	TPYJC05001
D101	DIODE,SILICON 1SS133T-77	D1VT001330
D652	LED LTL-1CHGE-002A	0021E5Q210
D659	DIODE,ZENER MTZJ6.2B T-77	D97U06R21B
D681	LED LTL-1CHAE-002A	0021E3Q030
D1701	DIODE,SILICON 1N4005-EIC	D2WXN40050
D1702	DIODE,SILICON 1N4005-EIC	D2WXN40050
D1705	DIODE,ZENER MTZJ9.1B T-77	D97U09R11B
D1707	DIODE,ZENER MTZJ5.1B T-77	D97U05R11B
D1708	DIODE,ZENER MTZJ9.1B T-77	D97U09R11B
D1709	DIODE,SILICON 1SS133T-77	D1VT001330
D3001	INFRARED LED LTE-3271T-012A-O	0010E00330
D3007	DIODE,SILICON 1SS133T-77	D1VT001330
D3009	DIODE,SILICON 1SS133T-77	D1VT001330
D8003	DIODE,ZENER MTZJ6.2B T-77	D97U06R21B
D8004	DIODE,ZENER MTZJ6.2B T-77	D97U06R21B
D8006	DIODE,ZENER MTZJ6.8B T-77	D97U06R81B
D8007	DIODE,ZENER MTZJ6.8B T-77	D97U06R81B
D8008	DIODE,ZENER MTZJ6.8B T-77	D97U06R81B
D8009	DIODE,ZENER MTZJ6.2B T-77	D97U06R21B
D8010	DIODE,ZENER MTZJ6.2B T-77	D97U06R21B
D8011	DIODE,SILICON 1SS133T-77	D1VT001330
D8012	DIODE,SILICON 1SS133T-77	D1VT001330
D8301	DIODE,SCHOTTKY RB721Q-40 T-77	D1VTB721Q0
D8303	DIODE,SCHOTTKY RB721Q-40 T-77	D1VTB721Q0
D8307	DIODE,SCHOTTKY RB721Q-40 T-77	D1VTB721Q0
D8310	DIODE,SCHOTTKY RB721Q-40 T-77	D1VTB721Q0
D8314	DIODE,SCHOTTKY RB721Q-40 T-77	D1VTB721Q0

COILS AND TRANSFORMERS

L101	COIL 100UH	02167F101J
L102	COIL,BIAS OSC 1616003	031616003R
L103	COIL 100UH	02167F101J
L104	COIL 100UH	02167F101J
L106	COIL 47UH	021LA6470J
L107	COIL 82UH	021LA6820K
L108	COIL 22UH	02167F220J
L109	COIL 12UH	021LA6120J
L110	COIL 39UH	021LA6390J
L111	COIL 100UH	02167F101J
L112	COIL 22 UH	02167F220J
L113	COIL 1UH	021LA61R0M
L114	COIL 1UH	021LA61R0M
L115	COIL 1UH	021LA61R0M
L301	COIL 100UH	02167F101J
L651	COIL 100UH	02167F101J
L701	COIL 22UH	02167F220J
L702	COIL 22UH	02167F220J
L703	COIL 22UH	02167F220J
L801	COIL 22UH	02167F220J
L802	COIL 22UH	02167F220J
L803	COIL 22UH	02167F220J
L1702	COIL 47 UH	02167F470J
L1703	COIL 22UH	021W7A220K
L3001	COIL 27UH	021LA6270K
L3002	COIL 22UH	021W7A220K
L3003	COIL 12UH	021LA6120J
L4601	COIL 22UH	021W7A220K

Mark No.	Description	Part No.
L7302	COIL 1 UH	0216S71R0J
L7303	COIL 1 UH	0216S71R0J
L7305	COIL 1 UH	0216S71R0J
L7306	COIL 1 UH	0216S71R0J
L7307	COIL 6.8 UH	0216S76R8J
L7308	COIL 6.8 UH	0216S76R8J
L7309	COIL 6.8 UH	0216S76R8J
L8001	COIL 22UH	02167F220J
L8002	COIL 22UH	02167F220J
L8003	COIL 100 UH	02167F101J
L8005	COIL 10UH	02167F100J
L8006	COIL 1UH	021LA61R0M
L8007	COIL 10UH	021LA6100J
L8008	COIL 100 UH	02167F101J
L8009	COIL 100 UH	02167F101J
L8010	COIL 100 UH	02167F101J
L8302	COIL 100 UH	02167F101J

SWITCHES

SW651	SWITCH,TACT	EVQ21505R	0504101T34
SW652	SWITCH,TACT	EVQ21505R	0504101T34
SW653	SWITCH,TACT	EVQ21505R	0504101T34
SW681	SWITCH,TACT	EVQ11L05R	0504R01T38
SW682	SWITCH,TACT	EVQ11L05R	0504R01T38
SW683	SWITCH,TACT	EVQ11L05R	0504R01T38
SW684	SWITCH,TACT	EVQ11L05R	0504R01T38
SW685	SWITCH,TACT	EVQ11L05R	0504R01T38
SW686	SWITCH,TACT	EVQ11L05R	0504R01T38
SW687	SWITCH,TACT	EVQ11L05R	0504R01T38
SW688	SWITCH,TACT	EVQ11L05R	0504R01T38
SW3001	SWITCH (LEAF)	LSA-1144EAU	0508S11001

CAPACITORS

C685	CC 0.1UF 50V B	CQGTB0415K
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RESISTORS

R531	R,FUSE 22 ohm 1/4W	R65584220J
R533	R,FUSE 2.7 ohm 1/4W	R655842R7
R1701	R,METAL OXIDE 1.5ohm 3W	R3X28B1R5J
R1725	R,FUSE 100ohm 1/4W	R65584101J

OTHERS

B651	CORE,BEADS MMZ1608R102CT	0246C51024
B652	CORE,BEADS MMZ1608R102CT	0246C51024
B653	CORE,BEADS MMZ1608R102CT	0246C51024
B654	CORE,BEADS MMZ1608R102CT	0246C51024
B655	CORE,BEADS MMZ1608R102CT	0246C51024
B4001	CORE,BEADS FCM2012H-102T04	024HC31022
B4002	CORE,BEADS HCB2012K-600T25	024HC36001
B4003	CORE,BEADS HCB2012K-600T25	024HC36001
B4004	CORE,BEADS HCB2012K-600T25	024HC36001
B4005	CORE,BEADS HCB2012K-600T25	024HC36001
B4006	CORE,BEADS FCM2012H-102T04	024HC31022
B4007	CORE,BEADS FCM2012H-102T04	024HC31022
B4008	CORE,BEADS FCM2012H-102T04	024HC31022
B7301	CORE,BEADS FCM2012H-102T04	024HC31022
B7304	CORE,BEADS HCB2012K-600T25	024HC36001
B7305	CORE,BEADS HCB2012K-600T25	024HC36001
B7306	CORE,BEADS HCB2012K-600T25	024HC36001
B7307	CORE,BEADS HCB2012K-600T25	024HC36001
B8001	CORE,BEADS FCM2012H-102T04	024HC31022
BT601	BATTERY, MANGAN R03(AB)2PXGPI	1412004013

Mark No. Description Part No.

Mark No. Description Part No.

CD102 CORD,JUMPER 2F061501 0122F061501
 ⚠ CD501 CORD,AC BUSH 6659807 1206659807
 CD502 WPL6028038
 A FLAT CABLE AWM2468 A WG26 16C BLACK 280MM
 CD504 CORD,CONNECTOR CU641202 06CU641202
 CD601 CABLE,21PIN S-1002 06CDVA5002
 CD651 CORD,CONNECTOR CU252802 06CU252802
 CP101 CONNECTOR PCB SIDE TOC-C09X-A1 0697290620
 CP102 CONNECTOR PCB SIDE IMSA-9604S-06C 069J760599
 CP103 WIRE HOLDER B2013H02-2P 067U002019

J652 RCA JACK MSP-281V40-B 060J401098
 J653 RCA JACK MSP-281V42-B 060J401099
 J654 JACK MDC-012V1-A_LF 063D700010
 J8001 SOCKET,21PIN MRC-021V-27_PC 063D000077
 J8002 RCA JACK MSP-213V1-732_NI_LF 060J411033
 PCB010 PCB ASS'Y VMD329B A2E905T010B
 PCB240 PCB ASS'Y VPC174A A2E905T240B
 PCB270 PCB ASS'Y VECA30A A2E905T270B
 PCBB10 PCB ASS'Y VMD340A A2E905TB10B

⚠ CP502 WIRE HOLDER B2013H02-16P 067U016019
 ⚠ CP681 CONNECTOR PCB SIDE A2001WR2-5P 069S250639
 CD4001 CORD,JUMPER BH040061 12BH040061
 CD6002 CABLE,SECAM CDL02004 06CDL02004
 B CD7301 CORD,JUMPER 2H0K1802 122H0K1802

CD7302 CORD,JUMPER 2H0K1802 122H0K1802
 CD7303 CORD,JUMPER 2H0I1802 122H0I1802
 CD7304 CORD,CONNECTOR CU2A3701 06CU2A3701
 ⚠ CP1701 CONNECTOR PCB SIDE 52147-1610 069R2G0589
 CP1703 CONNECTOR PCB SIDE A2001WW2-10P 069S2A0629

⚠ CP3001 CONNECTOR PCB SIDE TMC-J12P-B2 06972C0010
 CP4001 CONNECTOR PCB SIDE 04_6274_000_800 069S2A0629
 CP4007 CONNECTOR PCB SIDE A2001WR2-7P 069S270639
 CP7301 CONNECTOR PCB SIDE 04_6232_120_103_800 069EVKT040
 CP7302 CONNECTOR PCB SIDE 04_6232_120_103_800 069EVKT040

CP7303 CONNECTOR PCB SIDE 04_6232_120_103_800 069EVKT040
 CP7304 CONNECTOR PCB SIDE A2001WW2-10P 069S2A0629
 CP8301 069JVK0200
 CONNECTOR PCB SIDE IMSA-9615S-20C-PP-A
 CP8302 069JVK0200
 CONNECTOR PCB SIDE IMSA-9615S-20C-PP-A

CP8303 069JVI0200
 CONNECTOR PCB SIDE IMSA-9615S-18C-PP-A

⚠ DK4001 DECK CD DVR-R07OR VXX2976
 ⚠ ICP501 MICRO FUSE 20N_1000FS 0835C01003
 ⚠ ICP1701 MICRO FUSE 20N_1600FS 0835C01603

⚠ ICP1702 MICRO FUSE 20N_1600FS 0835C01603
 ⚠ M501 FAN MOTOR 2410ML-04W-B10-C47 1519X56L03

NR4001 R,NETWORK 4D03WGGJ0470T5E 110P4470M4
 NR4002 R,NETWORK 4D03WGGJ0470T5E 110P4470M4
 NR4003 R,NETWORK 4D03WGGJ0470T5E 110P4470M4
 NR4004 R,NETWORK 4D03WGGJ0470T5E 110P4470M4
 NR4005 R,NETWORK 4D03WGGJ0470T5E 110P4470M4

NR4006 R,NETWORK 4D03WGGJ0470T5E 110P4470M4
 NR4007 R,NETWORK 4D03WGGJ0470T5E 110P4470M4
 NR4008 R,NETWORK 4D03WGGJ0470T5E 110P4470M4
 OS651 REMOTE RECEIVER ROM-N340LO 077A034001
 TM601 TRANSMITTER R56-0635 076R0JZ030

⚠ TU301 RF UNIT TCPL0601PD20D1 0162K17005

V651 096F90R404
 TUBE FLUORSCENT DISPLAY HNV-09SS48
 X101 CRYSTAL AT-49 100DT4R410
 X301 CERAMIC OSCILLATOR CSB500E5 1002A0R503
 X801 CRYSTAL HC-49/U-S 100CT01803
 X3001 CRYSTAL HC-49/U-S 100CT01002

X3002 CRYSTAL DT-26 100DA32R01
 X3003 CRYSTAL HC-49/U-S 100CT01701
 X4001 CRYSTAL DSO751SV 100DT02712
 X8301 CERAMIC OSCILLATOR CSB500E5 1002A0R503
 J651 RCA JACK MSP-281V31-A 060J421039

6. ADJUSTMENT

6.1 SERVICING FIXTURES AND TOOLS

(For 4 heads model) VHS Alignment Tape GGV1222 : (VP1S-LI6 ³ H) GGV1223 : (VP1S-X6 ³) GGV1224 : (VP2L-LI1 ³)	GGF1506 Adapter GGF1507 Dial Torque Gauge (10~90 gf•cm) GGF1508 (60~600 gf•cm)	GGF1509 Post Adjustment Screwdriver Part No. SV-TG0-030-000 (small)	GGF1510 X Value Adjustment Screwdriver
GGF1511 Master Plane	GGF1512 Reel Disk Height Adjustment Jig	GGV1186 Torque Tape (VHT-063)	

Part No.	Parts Name	Remarks
GGV1222	VHS Alignment Tape	Hi-Fi Audio (For Hi-Fi model)
GGV1223	VHS Alignment Tape	X Value Adjustment (For 4 heads model)
GGV1224	VHS Alignment Tape	EP Monoscope, 6 kHz (For 4 heads model)
GGF1506	Adapter	VSR Torque, Brake Torque (S Reel/T Reel Assy)
GGF1507	Dial Torque Gauge (10~90 gf•cm)	Brake Torque (T Reel Assy)
GGF1508	Dial Torque Gauge (60~600 gf•cm)	VSR Torque, Brake Torque (S Reel)
GGF1509	Post Adjustment Screwdriver	Guide Roller Adjustment
GGF1510	X Value Adjustment Screwdriver	X Value Adjustment
GGF1511	Master Plane	Reel Disk Height Adjustment
GGF1512	Reel Disk Height Adjustment Jig	Reel Disk Height Adjustment
GGV1186	Torque Tape (VHT-063)	Playback Torque, Back Tension Torque During Playback

PREPARATION FOR SERVICING

- While pressing the CH DOWN button on the set for more than 2 seconds, press the POWER button on the set simultaneously at the Power OFF. Although the DVD is connected, the DVD mode cannot be selected.
- Press both CH UP button on the set and the REC button on the set for more than 2 seconds.
(The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape.)
- In case of using a cassette tape, press the VCR EJECT button to insert or eject a cassette tape.
Turn on the power and re-check the cable before checking the trouble points.

When you servicing with connection of DVD, perform the operations above step 2 to step 3.

1

2

3

4

6.2 ADJUSTMENT ITEMS AND NECESSARY ADJUSTMENT POINTS

■ Adjustment Items

A

[Mechanism Part]

1. CONFIRMATION AND ADJUSTMENT

① 1-1 CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

② 1-2 CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

③ 1-3 CONFIRMATION OF VSR TORQUE

④ 1-4 CONFIRMATION OF REEL BRAKE TORQUE
2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

⑤ 2-1 GUIDE ROLLER

⑥ 2-2 CONFIRMATION AND ADJUSTMENT OF AUDIO/CONTROL HEAD

⑦ 2-3 TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

⑧ 2-4 CONFIRM HI-FI AUDIO (Hi-Fi model only)

B

[Electrical Part]

1. BASIC ADJUSTMENT

⑨ 1-1 PG SHIFTER

⑩ DCR SIDE EEPROM (IC3099) INITIAL SETTING

⑪ REPLACING EEPROM (IC4002) IC

⑫ REGION SETTING

REPLACING NEW DVD LOADER

When

Adjustment Items

Replacing Parts of Mechanism Assy

Replacing
REEL DISK (S REEL, T REEL)



Mechanical point ① ② ③ ④

Electrical point None

Replacing
TENSION BAND
TENSION CONNECT
TENSION ARM ASSY
T BRAKE BAND
T BRAKE SPRING
T BRAKE ARM
IDLLER ASSY
CLUTCH ASSY



Mechanical point ② ③ ④

Electrical point None

Replacing
HEAD (AUDIO CONTROL)
CYLINDER UNIT ASSY



Mechanical point ⑤ ⑥ ⑦ ⑧

Electrical point ⑨

Replacing PCB Assy or Electrical Parts

Replacing
DECK ASSY
VCR MT PCB ASSY



Mechanical point None

Electrical point ⑨

Replacing
IC3099 (DCR SIDE EEPROM)



Mechanical point None

Electrical point ⑨ ⑩

Replacing
IC4002 (DVD SIDE EEPROM)



Mechanical point None

Electrical point ⑪

Replacing
DVD LOADER



Mechanical point None

Electrical point ⑫

6.3 SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

To enter to the SERVICE MODE function, press and hold both buttons simultaneously on the main unit or on the main unit and on the remote control for more than a standard time in the appropriate condition. (See below chart.)

In case of the main unit and remote control, press the remote control buttons first, then press the main unit buttons.

Set Condition	Set Key	Set Key	Standard Time	Operations
VCR mode	CH UP	FF	2 sec.	PLAY/REC total hours are displayed on the TV Monitor. Refer to the "6.4 CONFIRMATION OF HOURS USED".
Power On	CH UP	PLAY	2 sec.	Initialization of the factory on VCR. Note: If you set a factory initialization, the memories are reset such as the clock setting, the channel setting, and PLAY/REC total hours.
VCR mode (Playback)	CH UP	CH DOWN	2 sec.	Adjusting of the Tracking to the center position. Note: Also can be adjusted by pressing the ATR button for more than 2 seconds during PLAY.
VCR mode	CH UP	REC	2 sec.	The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape. Refer to the "PREPARATION FOR SERVICING" of section 6.1.
VCR mode (Playback)	VCR/DVD	REC	2 sec.	Adjust the PG SHIFTER automatically. Refer to the "6.7 ELECTRICAL ADJUSTMENTS".
Power On	CH DOWN	VCR/DVD	2 sec.	Information screen displayed on the TV Monitor. Refer to the "6.8 WHEN REPLACING NEW DVD LOADER".
Power Off	CH DOWN	POWER	2 sec.	VCR operation mode at no connection of DVD. Refer to the "PREPARATION FOR SERVICING" of section 6.1. Note: Although the DVD is connected, the DVD mode cannot be selected.

Set Condition	Set Key	Remocon Key	Standard Time	Operations
DVD mode (STOP)	STOP	0	2 sec.	Tray cannot be opened. Refer to the "7.7 TRAY LOCK". Note: No indications on the screen when the Tray Lock is setting. The function will only work without the setting of DVD disc at DVD mode.
DVD mode (No sisc)	STOP	2	2 sec.	DVD Write mode. Refer to the "7.1 RE-WRITE FOR DVD FIRMWARE".
DVD mode (No sisc)	STOP	6	2 sec.	DVD side EEPROM initial setting. Refer to the "6.9 WHEN REPLACING EEPROM (MEMORY) IC".
DVD mode (No sisc)	STOP	7	2 sec.	Releasing of PARENTAL LOCK. Refer to the "7.6 PARENTAL CONTROL-RATING LEVEL".
DVD mode (STOP)	STOP	8	2 sec.	Region setting. Refer to the "6.8 WHEN REPLACING NEW DVD LOADER".
DVD mode (DVD Play back)	STOP	9	2 sec.	Measure ment of Error Rate. Refer to the "7.2 Measure ment of Error Rate".

6.4 CONFIRMATION OF HOURS USED

PLAY/REC total hours can be checked on the screen.
Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".

1. Connect the set to TV Monitor.
2. Turn on the POWER, and set to the VCR mode.
3. Press both CH UP button on the set and the FF button on the set for more than 2 seconds.
The **Fig. 1** screen will appear on TV Monitor.
4. After the confirmation of using hours, turn off the power.

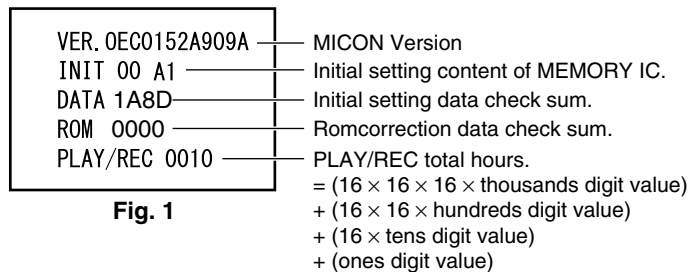


Fig. 1

6.5 PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage.

Parts replacing time does not mean the life span for individual parts.

Also, long term storage or misuse may cause transformation and aging of rubber parts.

The following list means standard hours, so the checking hours depends on the conditions.

Parts Name	Time 500 hours	1,000 hours	1,500 hours	2,000 hours	2,500 hours	Notes
Audio Control Head	■	■	■	●	●	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	●	●	
Capstan Belt		●	●	●	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	●	●	●	●	
Capstan DD Unit		●	●	●	●	
Loading Motor					●	
Tension Band		●	●	●	●	
T Brake Band		●	●	●	●	
Clutch Assy		●	●	●	●	
Idler Arm Assy		●	●	●	●	
Capstan Shaft	■	■	■	■	■	Replace when rolling becomes abnormal.
Tape Running Guide Post	■	■	■	■	■	
Cylinder Unit	■	●	●	●	●	Clean the Head

■ : Clean

● : Check it and if necessary, replace it.

CLEANING

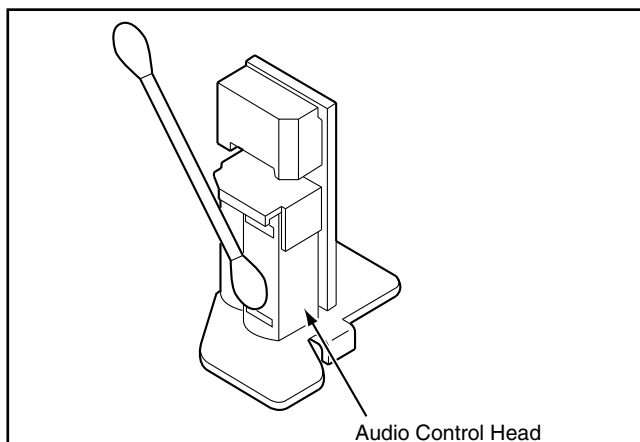
NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

Clean the Audio Control Head with the cotton stick soaked by alcohol. Clean the full erase head in the same manner.

(Refer to the figure below.)



2. TAPE RUNNING SYSTEM

When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

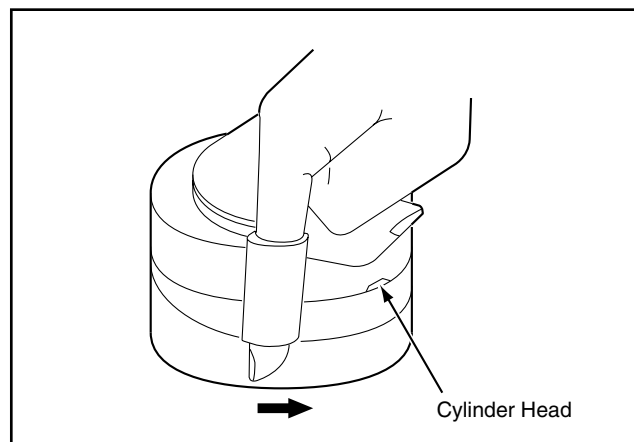
Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly.

Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). (Refer to the figure below.)

NOTE

Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head.

Use the chamois one by one.



6.6 MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder.
(Do not place an object which weighs over 500g.)



1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

- Turn on the power and set to the STOP mode.
- Set the master plane (GGF1511) and reel disk height adjustment jig (GGF1512) on the mechanism framework, taking care not to scratch the drum, as shown in Fig. 1-1-A.
- While turning the reel and confirm the following points. Check if the surface "A" of reel disk is lower than the surface "B" of reel disk height adjustment jig (GGF1512) and is higher than the surface "C". If it is not passed, place the height adjustment washers and adjust to 10 (+2, -0) mm.
- Adjust the other reel in the same way.

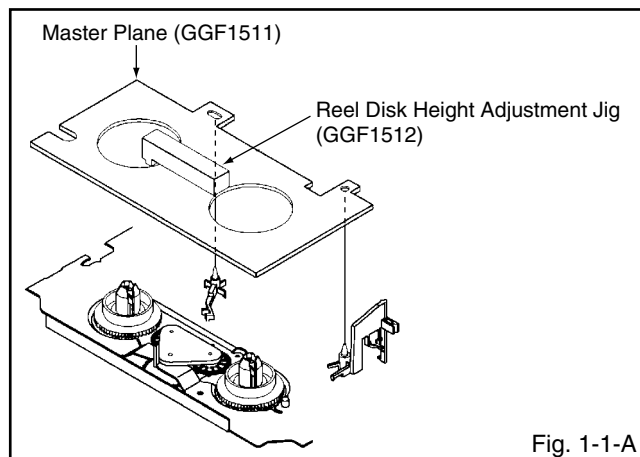


Fig. 1-1-A

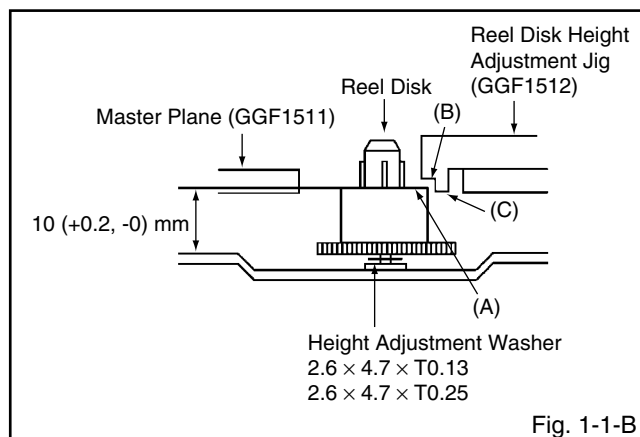


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

- Set to the PLAY mode.
- Adjust the adjusting section for the Tension Arm position so that the Tension Arm top is within the standard line of Main Chassis.
- While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

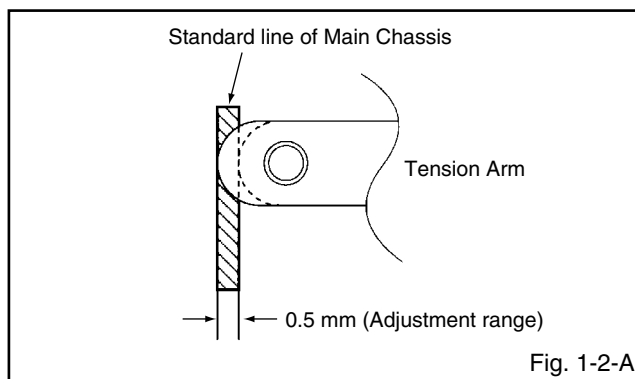


Fig. 1-2-A

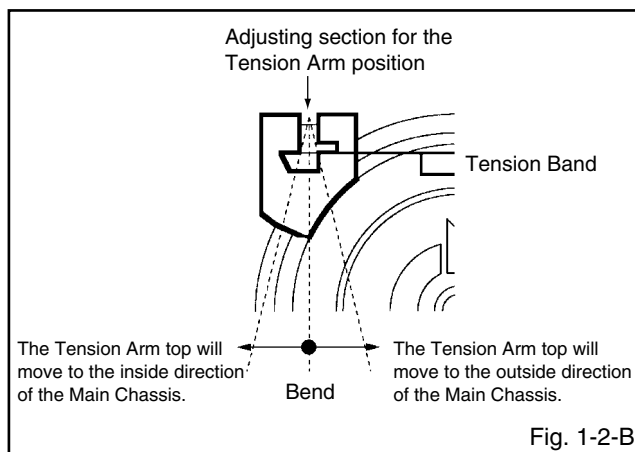


Fig. 1-2-B

• USING A CASSETTE TYPE TORQUE TAPE (GGV1186)

- After confirmation and adjustment of Tension Post position (Refer to item 1-2), load the cassette type torque tape (GGV1186) and set to the PLAY mode.
- Confirm that the right meter of the torque tape indicates 50~90gf•cm during playback in SP mode.
- Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.

1-3: CONFIRMATION OF VSR TORQUE

1. Install the Torque Gauge (**GGF1508**) and Adapter (**GGF1506**) on the S Reel. Set to the Picture Search (Rewind) mode. (Refer to Fig.1-4-B)
2. Then, confirm that it indicates 120~180gf•cm.

NOTE

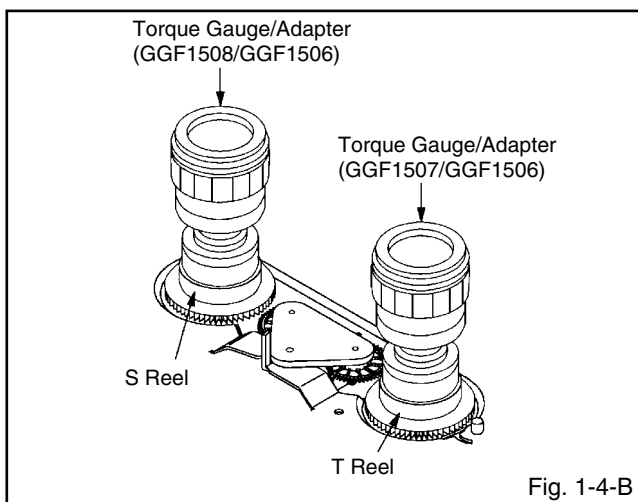
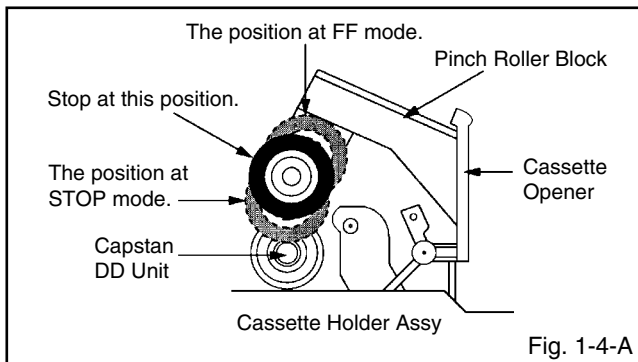
Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

1-4: CONFIRMATION OF REEL BRAKE TORQUE (S Reel Brake) (Refer to Fig. 1-4-B)

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of Fig. 1-4-A.
2. Move the Idler Assy from the S Reel.
3. Install the Torque Gauge (**GGF1508**) and Adapter (**GGF1506**) on the S Reel. Turn the Torque Gauge (**GGF1508**) clockwise.
4. Then, confirm that it indicates 60~100gf•cm.

(T Reel Brake) (Refer to Fig. 1-4-B)

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of Fig. 1-4-A.
2. Move the Idler Assy from the T Reel.
3. Install the Torque Gauge (**GGF1507**) and Adapter (**GGF1506**) on the T reel. Turn the Torque Gauge (**GGF1507**) counterclockwise.
4. Then, confirm that it indicates 30~50gf•cm.



NOTE

If the torque is out of the range, replace the following parts.

Check Item	Replacement Part
1-3	Idler Assy / Clutch Assy
1-4	S Reel side : S Reel/ Tension Band/Tension Connect/Tension Arm Assy T Reel side : T Reel/ Brake Band/T Brake Spring /T Brake Arm

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

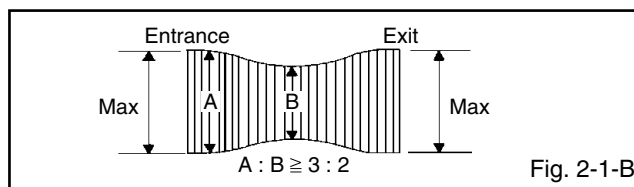
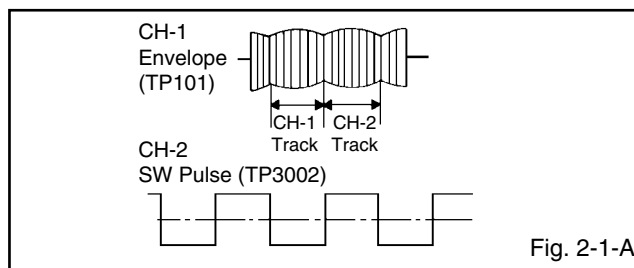
Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

2-1: GUIDE ROLLER

1. Playback the VHS Alignment Tape (**GGV1222**). (Refer to **SERVICING FIXTURE AND TOOLS**)
2. Connect CH-1 of the oscilloscope to **TP103 (Envelope)** and CH-2 to **TP102 (SW Pulse)**.
3. Press and hold the ATR button on the remote control more than 2 seconds to set tracking to center.
4. Trigger with SW Pulse and observe the envelope. (Refer to Fig. 2-1-A)
5. When observing the envelope, adjust the Adjusting Driver (**GGF1509**) slightly until the envelope will be flat. Even if you press the Tracking Button, adjust so that flatness is not moved so much.
6. Adjust so that the A : B ratio is better than 3 : 2 as shown in Fig. 2-1-B, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
7. Adjust the PG shifter during playback. (Refer to the **ELECTRICAL ADJUSTMENTS**)

NOTE

After adjustment, confirm and adjust A/C head. (Refer to item 2-2)



2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/CONTROL HEAD

When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape (**GGV1222**).
(Refer to **SERVICING FIXTURE AND TOOLS**)
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Post as shown in **Fig. 2-2-A**.
 - a) When the reflected picture is distorted, turn the screw ① clockwise until the distortion is disappeared.
 - b) When the reflected picture is not distorted, turn the screw ① counterclockwise until little distortion is appeared, then adjust the a).
3. Select the output audio from Stereo to Mono, using the Audio Select button of Remote.
4. Turn the screw ② to set the audio level to maximum.
5. Confirm that the bottom of the Audio/ Control Head and the bottom of the tape is shown in **Fig. 2-2-C**.
 - c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.

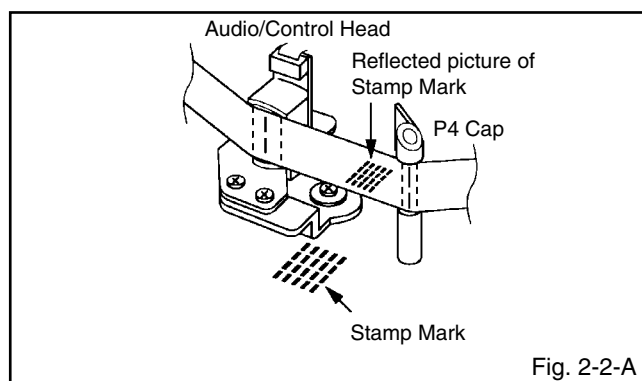


Fig. 2-2-A

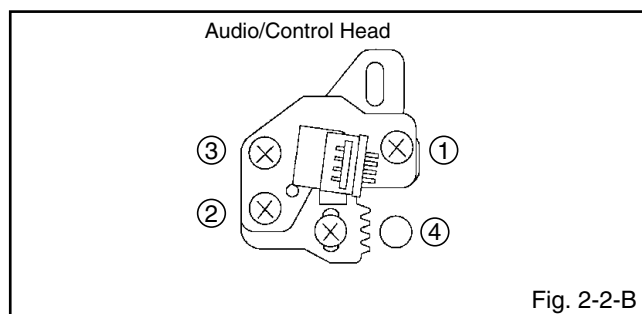


Fig. 2-2-B

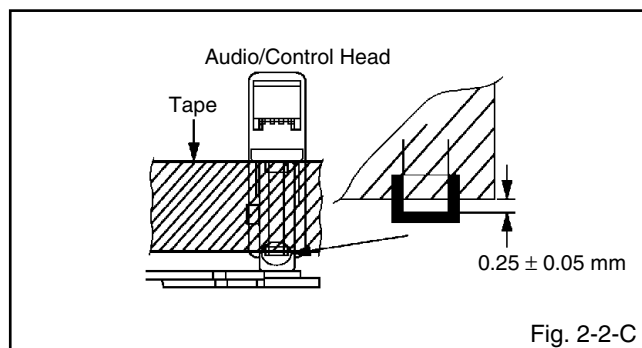


Fig. 2-2-C

2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

1. Confirm and adjust the height of the Reel Disk.
(Refer to item 1-1)
2. Confirm and adjust the position of the Tension Post.
(Refer to item 1-2)
3. Adjust the Guide Roller. (Refer to item 2-1)
4. Confirm and adjust the Audio/Control Head.
(Refer to item 2-2)
5. Connect CH-1 of the oscilloscope to **TP102**, CH-2 to **TP103** and CH-3 to **HOT side of Audio Out Jack**.
6. Playback the VHS Alignment Tape (**GGV1223**).
(Refer to **SERVICING FIXTURE AND TOOLS**)
7. Press and hold the ATR button on the remote control more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver (**GGF1510**) to the ④ of **Fig. 2-2-B**. Adjust X value so that the envelope waveform output becomes maximum. Check if the relation between Audio and Envelope waveform becomes (1) or (2) of **Fig. 2-3**.
9. Playback the VHS Alignment Tape (**GGV1224**).
(Refer to **SERVICING FIXTURE AND TOOLS**)
10. Check if the picture is played back correctly.

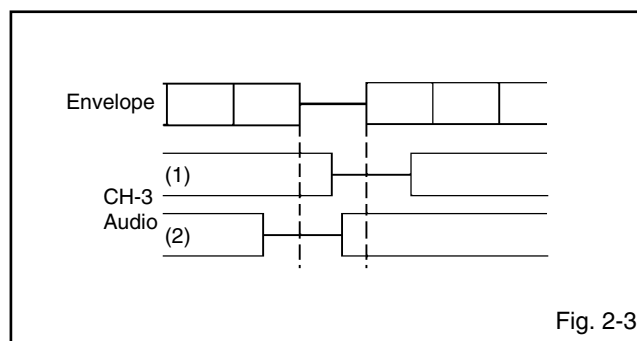
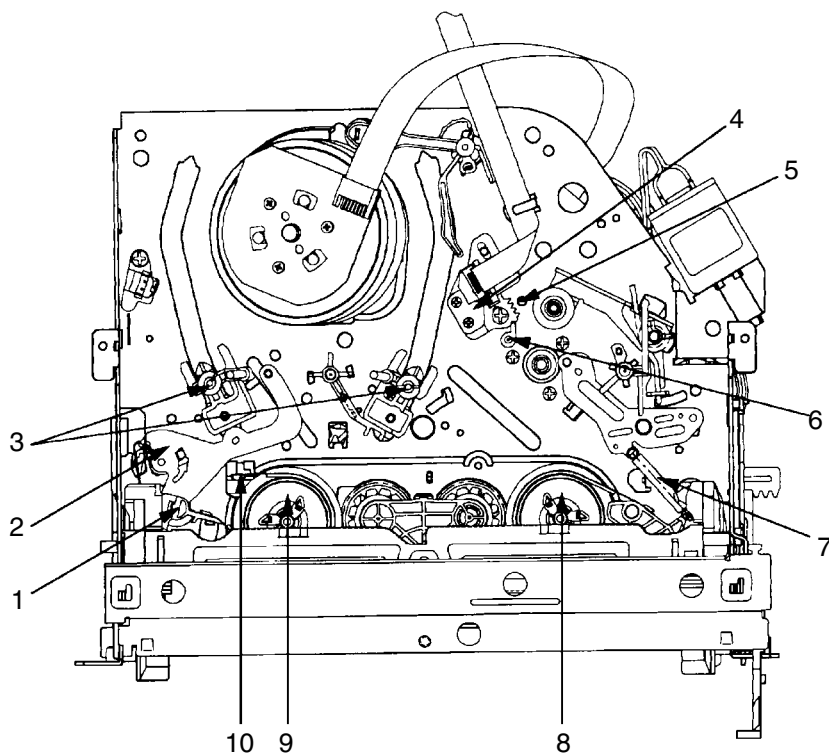


Fig. 2-3

2-4: CONFIRM HI-FI AUDIO (Hi-Fi model only)

1. Connect CH-1 of the oscilloscope to **TP102** and CH-2 to the **Hi-Fi Audio Out Jack**.
2. Playback the VHS Alignment Tape (**GGV1222**).
(Refer to **SERVICING FIXTURE AND TOOLS**)
3. Press and hold the ATR button on the remote control more than 2 seconds to set tracking to center.
4. Press the Tracking Up button and count number of steps which the audio output is changed from Hi-Fi (10KHz) to MONO (6KHz).
5. Press and hold the ATR button on the remote control more than 2 seconds to set tracking to center.
6. Press the Tracking Down button and count number of steps which the audio output is changed from Hi-Fi (10KHz) to MONO (6KHz).
7. If the difference are more than 3 steps, set the X Value adjustment driver (**GGF1510**) to ④ of **Fig. 2-2-B**. Change the X Value and adjust it so that the value becomes within 2 steps.

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



- | | |
|-----------------------------------|--|
| 1. Tension Connect | 6. P4 Post |
| 2. Tension Arm | 7. T Brake Spring |
| 3. Guide Roller | 8. T Reel |
| 4. Audio/Control Head | 9. S Reel |
| 5. X value adjustment driver hole | 10. Adjusting section for the Tension Arm position |

6.7 ELECTRICAL ADJUSTMENTS

Read and perform this adjustment when repairing the circuits or replacing electrical parts or PCB assemblies.



1. BASIC ADJUSTMENT

CAUTION

When you exchange IC and Transistor for a heat sink, apply the silicon grease on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)

1-1: PG SHIFTER

CONDITIONS

MODE-PLAYBACK

Input Signal-Alignment Tape (GGV1222)

INSTRUCTIONS

1. Connect CH-1 on the oscilloscope to **TP102** and CH-2 to **Pin 19 of the J8001**.
2. Playback the alignment tape. (GGV1222)
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Press both VCR/DVD button on the set and the REC button on the set for more than 2 seconds.

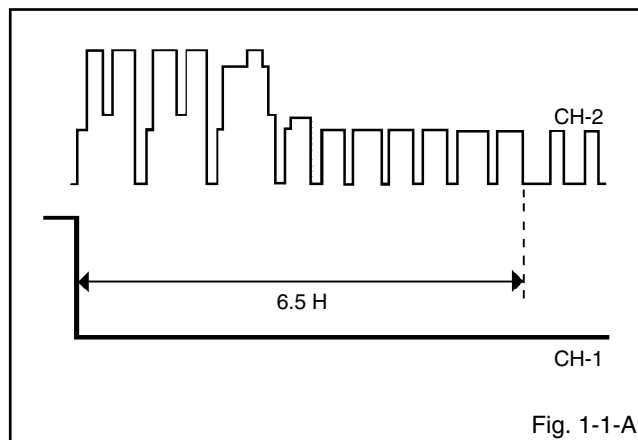


Fig. 1-1-A

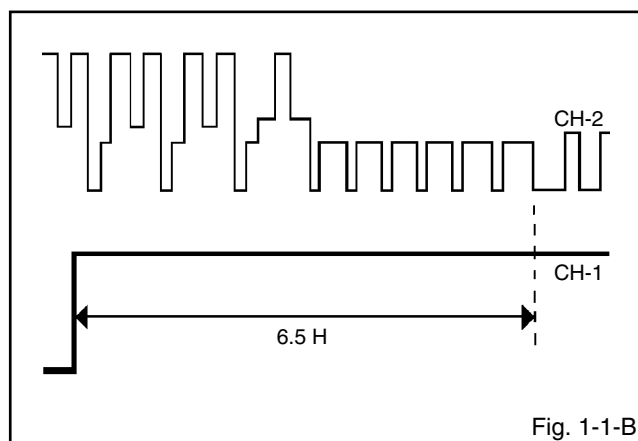


Fig. 1-1-B

6.8 WHEN REPLACING NEW DVD LOADER

NOTE:

If a service repair is undertaken where it has been required to change the New DVD Loader, Region setting is needed. If the Region setting does not performed, only the Region Free disc can be played. Region setting can only be done once. So, take notice very carefully.

1. Connect the set to TV Monitor.
2. Turn on the POWER, and set to the DVD mode.
3. Press both Channel button (8) on the remote control and the STOP button on the set for more than 2 seconds. Tray will open.
4. Place your Region setting disc on the tray and close. Writing will start.
5. After the writing, the writing Region No. will appear on the TV Monitor.

Perform the initializing of shipping (*)

6. Press both CH UP button on the set and the PLAY button on the set for more than 2 seconds.
7. After the finishing of the initializing of shipping, the unit will turn off automatically.

* : When initializing to shipping data, the VCR operating time record is cleared.

Check for the Region No.

8. Turn on the POWER, and set to the DVD mode.
9. Press both CH DOWN button on the set and the DVD/VCR button on the set for more than 2 seconds. Information screen will be displayed on the TV Monitor. (Refer to Fig. 1)
10. If the writing Region No. is appeared, the Region setting is completed.
11. Turn off the power.

	Vaddis	Timer
Ver.	RPE4A191-p	OEC0152A909A
C. Sum		1A8D
Accum	000000	0000
DVD	PIONEER DVD-RW DVR-R07RZ	
	1.03	Region-2

Region No.

Fig. 1

6.9 WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1 and 2.

NOTE: After the DATA change, if the ENTER button is not pressed at the DATA selection mode and the power is turned off, the DATA change does not performed.
After the DATA change, press the ENTER button by all means and set to the ADDRESS selection mode, then turn off the power.

VCR side EEPROM (IC3099) initial setting

INIT	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	A1	71	78	21	21	CF	26	AF	98	95	8A	1B	2A	09	29	13
10	48	84	28	F4	34	4A	A7	51	9F	3A	00	0D	BF	10	00	00
20	64	42	30	60	56	65	5E	00	AF	1A	FA	5F	04	02	65	5F
30	00	9F	2C	FA	5F	00	00	00	00	00	5F	00	9F	18	FA	4F
40	00	00	00	AF	00	29	FF	3F	00	00	21	01	00	20	00	30
50	70	00	20	70	05	6A	7C	7B	7B	A6	---	---	---	---	---	---

Table 1

1. Connect the set to TV Monitor.
2. Turn on the POWER, and set to the VCR mode.
3. Press both CH UP button on the set and the FF button on the set for more than 2 seconds.
ADDRESS and DATA will appear on TV Monitor as **Fig 1**.

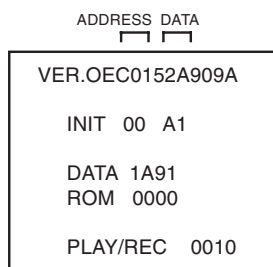


Fig. 1

4. ADDRESS is now selected and should "blink". Using the Tracking + or - button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
5. Press ENTER to select DATA. When DATA is selected, it will "blink".
6. Again, step through the DATA using Tracking + or - button until required DATA value has been selected.
7. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
8. Repeat steps 4 to 7 until all data has been checked.
9. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

After the data input, set to the initializing of shipping.

10. Turn on the POWER, and set to the VCR mode.
11. Press both CH UP button on the set and the PLAY button on the set for more than 2 seconds.
12. After the finishing of the initializing of shipping, the unit will turn off automatically.
The unit will now have the correct DATA for the new MEMORY IC.

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTE: After the DATA change, if the ENTER button is not pressed at the DATA selection mode and the power is turned off, the DATA change does not performed.
After the DATA change, press the ENTER button by all means and set to the ADDRESS selection mode, then turn off the power.

DVD side EEPROM (IC4002) initial setting

NOTE: INI 3FF data can not be set.

The datas for the address excepting from 3A0 to 3FF are displayed "ERR". This unit is not defective.

INIT	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
3A0	02	01	01	01	02	02	02	02	02	07	01	03	01	02	02	02
3B0	00	01	00	00	00	00	00	00	00	00	00	00	00	00	00	00
3C0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
3D0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
3E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
3F0	00	00	00	00	00	00	00	00	00	00	00	00	00	04	05	---

Table 1

1. Connect the set to TV Monitor.
2. Turn on the POWER, and set to the DVD mode.
3. Press both Channel button **(6)** on the remote control and the STOP button on the set for more than 2 seconds. ADDRESS and DATA will appear on TV Monitor as **Fig 1** and the ADDRESS is now selected.

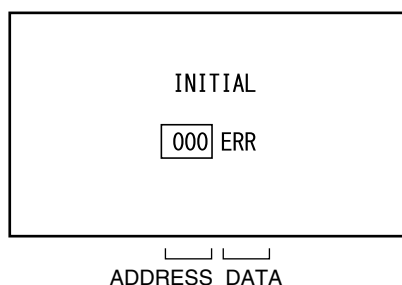


Fig. 1

4. Input the ADDRESS by using Channel +/- button or the following buttons below.
Numbers are 10 keys from 0 to 9, Alphabets are
A: VCR EJECT, B: DVD OPEN/CLOSE, C: DVD/VCR, D: TIMER REC, E: INPUT SELECT, F: DISPLAY.
5. Press ENTER to select DATA.
6. Again, step through the DATA using Channel + or - button until required DATA value has been selected.
7. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
8. Repeat steps 4 to 7 until all data has been checked.
9. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

After the data input, set to the initializing of shipping (*).

10. Turn on the POWER, and set to the DVD mode.
11. Press both CH UP button on the set and the PLAY button on the set for more than 2 seconds.
12. After the finishing of the initializing of shipping, the unit will turn off automatically.
The unit will now have the correct DATA for the new MEMORY IC.

* : When initializing to shipping data, the VCR operating time record is cleared.

7. GENERAL INFORMATION

7.1 RE-WRITE FOR DVD FIRMWARE

1. Connect the set to TV Monitor.
2. Turn on the POWER, and set to the DVD mode.
3. Confirm that the "No Disc" will be appeared on the screen.
A disc is already inserted, eject the disc and power it off and on again.
4. Press both Channel button (2) on the remote control and the STOP button on the set for more than 2 seconds.
* DVD tray open automatically.
5. Press OPEN/CLOSE button on the set to check if all the keys on the unit do not function.
NOTE: To check if DVD Write mode is set.
6. Place the Up-Date Disc and close the tray by hand. (**Refer to 6.1 SERVICING FIXTURES AND TOOLS**)
the Up-Date Disc.
7. Automatic read will start and "SDRAM writing" will be displayed on the screen.
8. Approx. 7 seconds later, the tray will open automatically. Remove the Up-Date Disc.
The display will change to "FLASH writing".
9. Then, Approx. 2 minutes 30 seconds later, the above indication will disappear and the tray will close automatically.
When the "Please Reboot" appears on the screen, the writing will be finished.
NOTE: Do not turn off the unit on the way or push the tray by hand to close it.
Up-Date error will happen and can not be done with the Up-Date of Up-Date Disc.
10. Unplug the AC cord, then plug it in.

After the write, set to the initializing of shipping (*).

11. Turn on the POWER, and set to the DVD mode.
12. Press both CH UP button on the set and the PLAY button on the set for more than 2 seconds.
13. After the finishing of the initializing of shipping, the unit will turn off automatically.

* : When initializing to shipping data, the VCR operating time record is cleared.

CHECK FOR THE FIRMWARE VERSION

14. Turn on the POWER, and set to the DVD mode.
15. Press both CH DOWN button on the set and the VCR/DVD button on the set for more than 2 seconds.
Information screen will be displayed on the TV Monitor. (**Refer to Fig. 1**)
16. When the changed version displays, the Re-write will be completed.
17. Turn off the power

Firmware version

	Vaddis	Timer
Ver.	RPE4A191-P	OEC0152A909A
C. Sum	040501BD	1A8D
Accum	000000	0000
DVD	PIONEER DVD-RW	DVR-R07RZ
	1.03	Region-2

Fig. 1

7.2 MEASUREMENT OF ERROR RATE

[Measurement Steps]

- 1) Load the disc that you want to measure the error rate of.
- 2) During playback, press "9" on the remote control and "STOP" on the main unit at the same time to measure the error rate for that part of the disc.
- 3) After the error rate has been measures, it is displayed on the screen. (This display is not updated.)

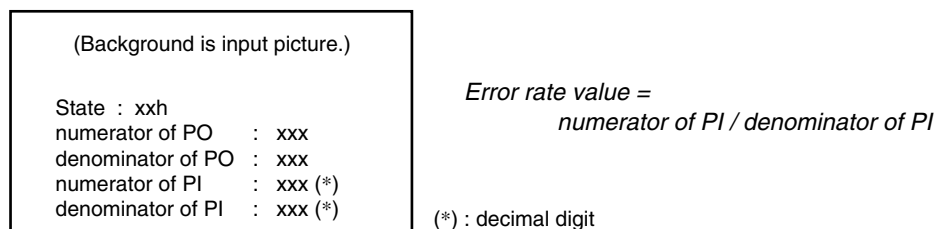


Fig. 1

- 4) To clear the error rate display from the screen, press "9" on the remote control and "STOP" on the main unit at the same time again.
When clearing this display, the error rate measurement is not executed.

Table 1: List of Reference Value

Disc Type	Recording Mode	Reference Value
DVD-VIDEO		8.0×10^{-4}
DVD-R	Video mode	1.0×10^{-3}
DVD-RW	Video mode	1.0×10^{-3}

1 2 3 4

7.3 POWER ON SEQUENCE

Power on Sequence

A

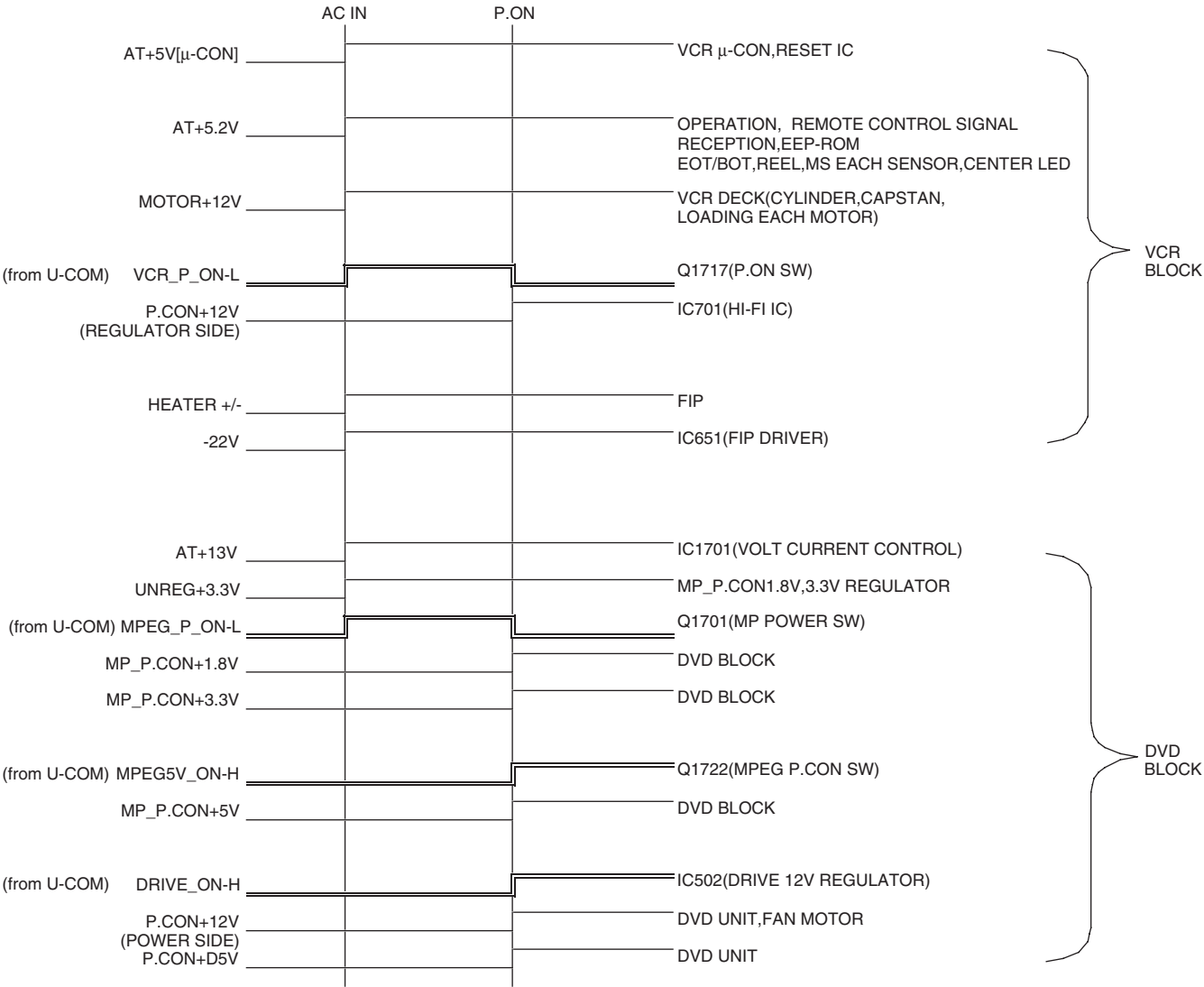
B

C

D

E

F



7.4 DISC REMOVAL METHOD

1. Insert a fine rod (wire etc.) into the hole of the Front Cabinet as shown by the arrow. **(Refer to Fig. 1)**
The Tray is opened.
2. Draw the Tray.

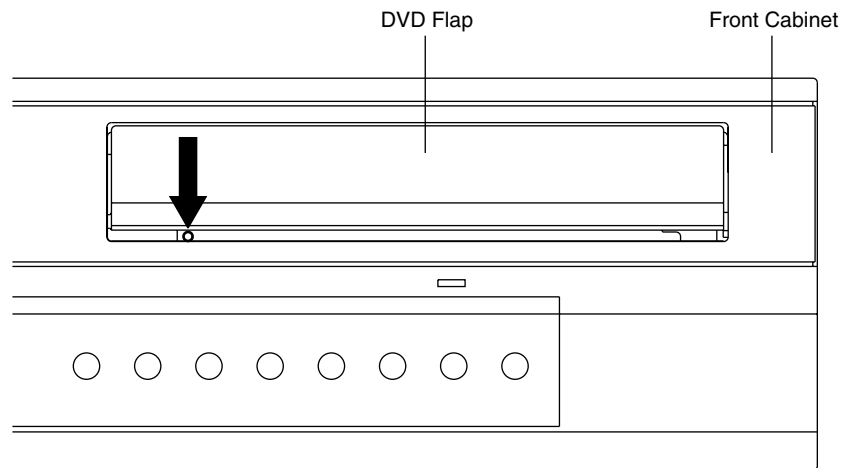


Fig. 1

7.5 TAPE REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Top Cabinet, Front Cabinet and DVD Block. **(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)**
2. Remove one screw of the Loading Motor from the insert hole for screw driver and remove the Loading Motor.
3. Rotate the Pinch Roller Cam in the direction of the arrow by hand to slacken the Video Tape.
(Refer to Fig. 2)
4. Rotate the Clutch Assy either of the directions to wind the Video Tape in the Cassette Case.
5. Repeat the above step 3~4. Then take out the Video Cassette from the Deck Chassis. Be careful not to scratch on the tape.

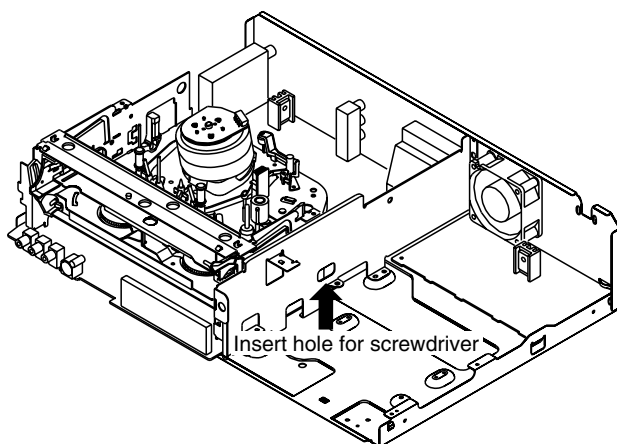


Fig. 1

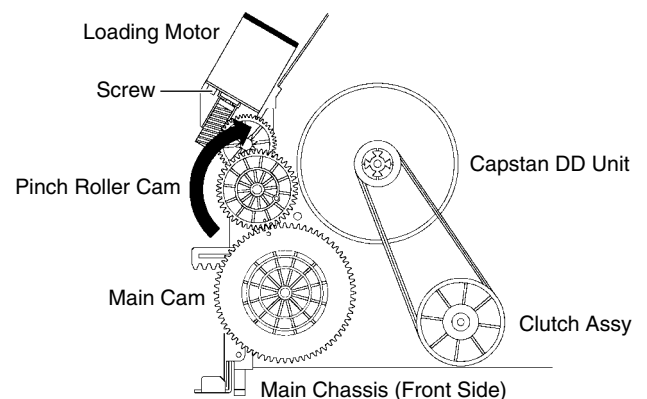


Fig. 2

7.6 PARENTAL CONTROL-RATING LEVEL

4 DIGIT PASSWORD CANCELLATION

A If the stored 4 digit password in the Rating Level menu needs to be cancelled, please follow the steps below.

1. Turn Unit ON.
2. Press and hold the '7' key on the remote control unit.
3. Simultaneously press and hold the 'STOP' key on the front panel.
4. Hold both keys for more than 2 seconds.
5. The On Screen Display message 'PASSWORD UNLOCK' will appear.
6. The 4 digit password has now been cleared

NB: No indications on the screen when the Parental Lock is setting.

B

7.7 TRAY LOCK

Tray cannot be opened by setting the Tray Lock, please follow the steps below.

- C
1. Turn Unit ON.
 2. Press and hold the '0' key on the remote control unit.
 3. Simultaneously press and hold the 'STOP' key on the front panel.
 4. Hold both keys for more than 2 seconds.
 5. Press the OPEN/CLOSE key on the front panel to check the Tray Lock setting.

NB: No indications on the screen when the Tray Lock is setting.

To unlock the Tray Lock, please follow the steps below.

- D
1. Turn Unit ON.
 2. Press and hold the '0' key on the remote control unit.
 3. Simultaneously press and hold the 'STOP' key on the front panel.
 4. Hold both keys for more than 2 seconds.
 5. The Tray Lock has now been cleared.
 6. Turn Unit OFF.

NB: No indications on the screen when the Tray Lock is setting.

E

F

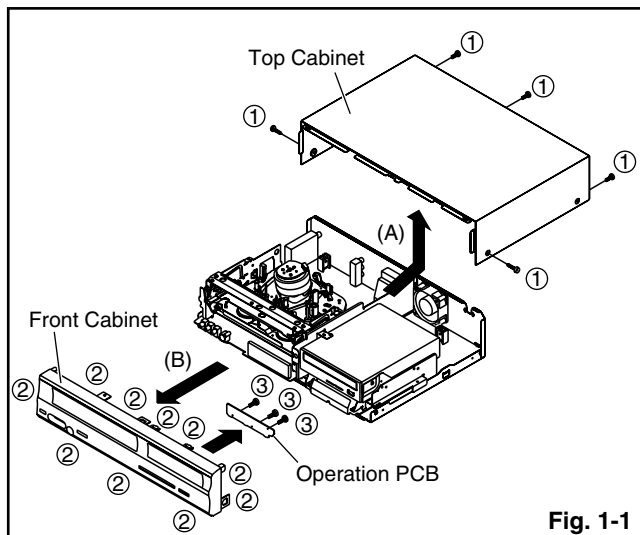
7.8 DISASSEMBLY

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: TOP CABINET AND FRONT CABINET

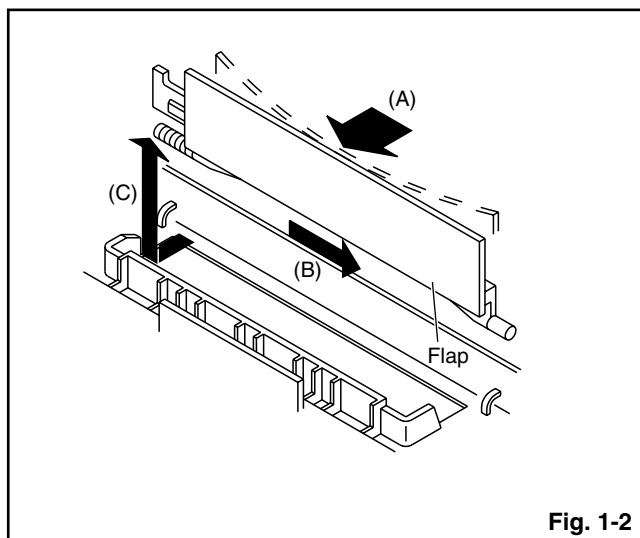
(Refer to Fig. 1-1)

1. Remove the 5 screws ①.
2. Remove the Top Cabinet in the direction of arrow (A).
3. Unlock the 10 supports ②.
4. Remove the Front Cabinet in the direction of arrow (B).
5. Disconnect the following connector: (CP681).
6. Remove the 3 screws ③.
7. Remove the Operation PCB in the direction of arrow (C).



1-2: FLAP (Refer to Fig. 1-2)

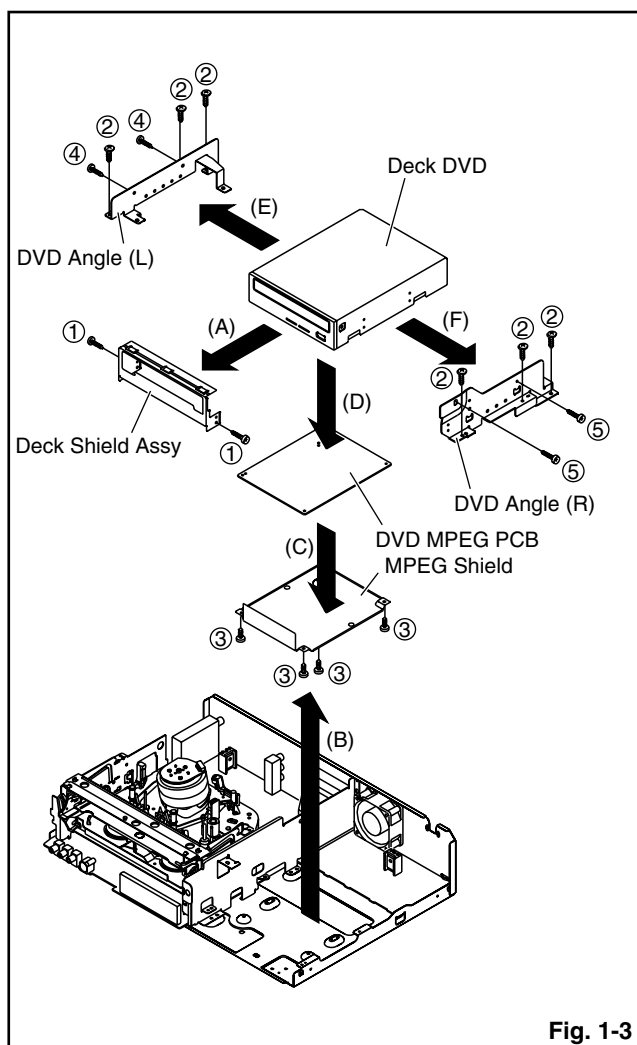
1. Open Flap to 90° and flex in direction of arrow (A), at the same time slide in direction of arrow (B).
2. Then lift in direction of arrow (C).



1-3: DECK DVD AND DVD MPEG PCB

(Refer to Fig. 1-3)

1. Remove the 6 screws ②.
2. Disconnect the following connectors: (CP504, CP1703, CP8301, CP8302, CP8303).
3. Remove the Deck DVD Block in the direction of arrow (B).
4. Remove the 2 screws ①.
5. Remove the Deck Shield Assy in the direction of arrow (A).
6. Remove the 4 screws ③.
7. Remove the MPEG Shield in the direction of arrow (C).
8. Disconnect the following connector: (CP4001).
9. Remove the DVD MPEG PCB in the direction of arrow (D).
10. Remove the 2 screws ④.
11. Remove the DVD Angle (L) in the direction of arrow (E).
12. Remove the 2 screws ⑤.
13. Remove the DVD Angle (R) in the direction of arrow (F).



1-4: POWER PCB (Refer to Fig. 1-4)

1. Remove the 2 screws ①.
2. Disconnect the following connector: (CP506).
3. Remove the Fan Motor in the direction of arrow (A).
4. Remove the 3 screws ②.
5. Disconnect the following connector: (CP1701).
6. Remove the Power PCB in the direction of arrow (B).

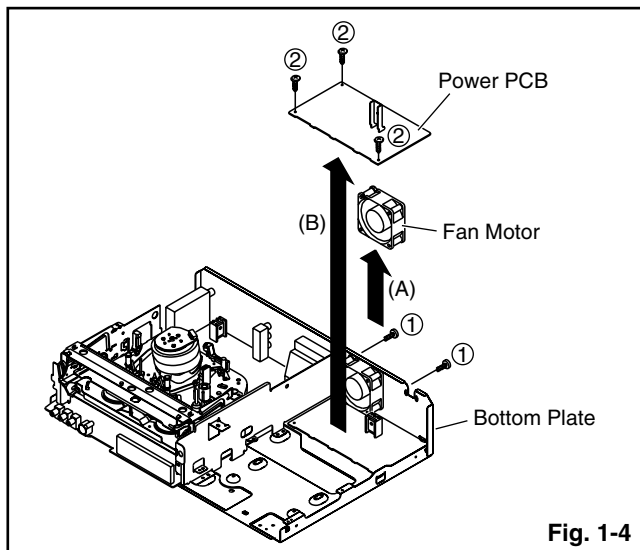


Fig. 1-4

1-6: VCR PCB (Refer to Fig. 1-6)

1. Remove the screw ①.
2. Remove the screw ②.
3. Remove the 2 screws ③.
4. Remove the Jack Shield.
5. Remove the VCR PCB in the direction of arrow.

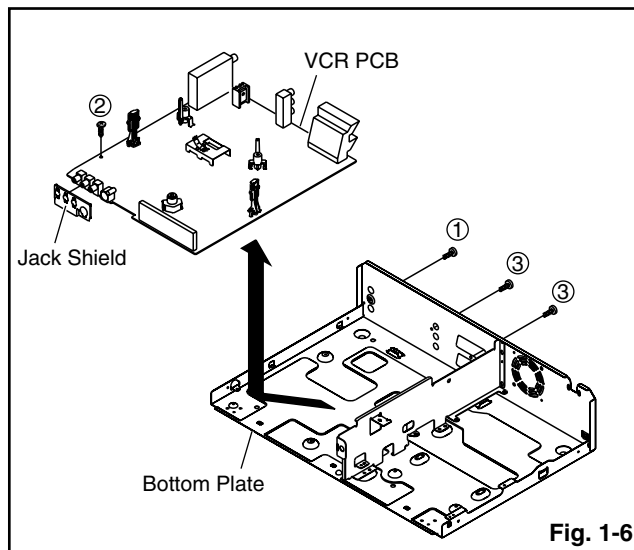


Fig. 1-6

1-5: VCR DECK (Refer to Fig. 1-5)

NOTE:

Do not remove the cable at the FE Head section. The FE Head may be damaged if you remove the cable by force.

1. Unlock the 2 supports ① and remove the Top Holder.
2. Remove the screw ②.
3. Remove the FE Head.
4. Move the Cassette Holder Assy to the back side.
5. Remove the 3 screws ③.
6. Disconnect the following connectors: (CP101, CP102, CP3001).
7. Remove the AC Head Cover and VCR Deck in the direction of arrow.

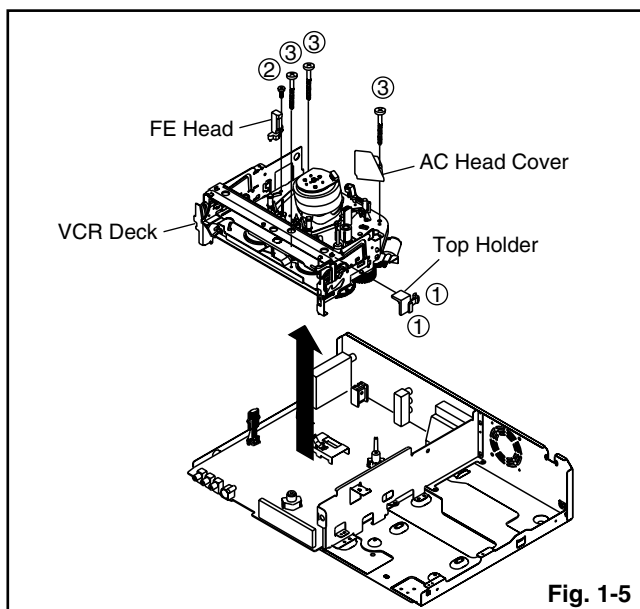


Fig. 1-5

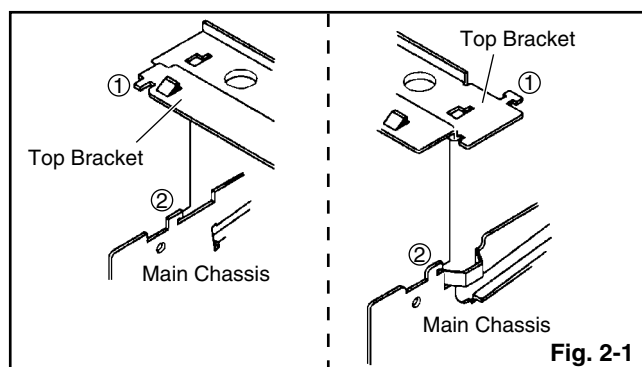
2. REMOVAL OF VCR DECK PARTS

2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Extend the 2 supports ①.
2. Slide the 2 supports ② and remove the Top Bracket.

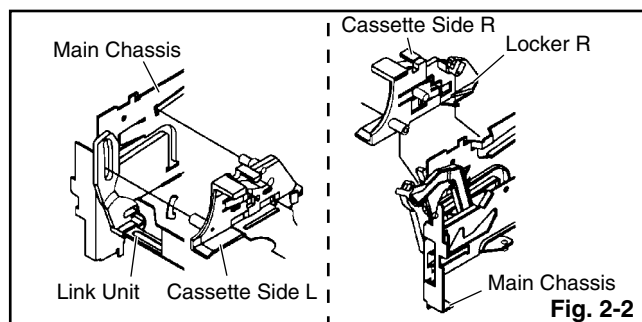
NOTE:

1. After the installation of the Top Bracket, bend the support ① so that the Top Bracket is fixed.



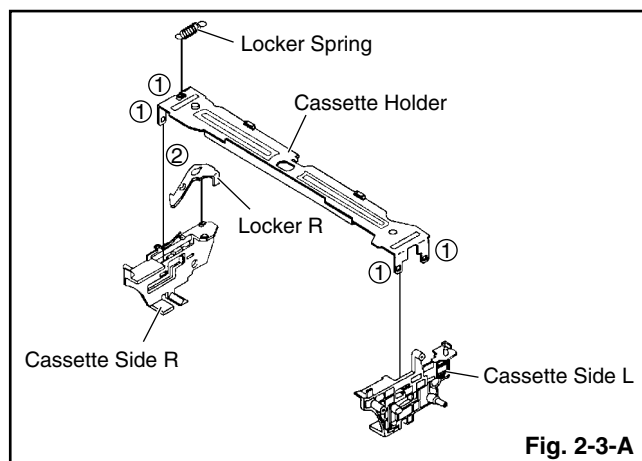
2-2: CASSETTE HOLDER ASSY (Refer to Fig. 2-2)

1. Move the Cassette Holder Assy to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.



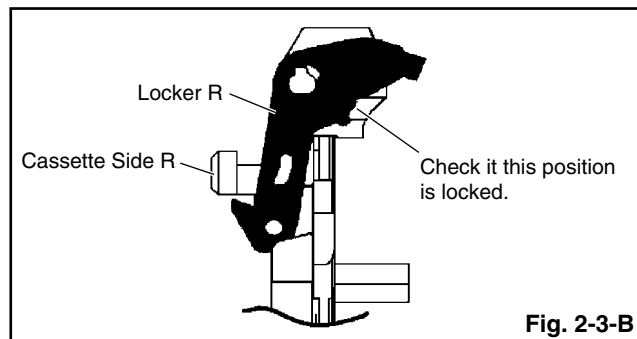
2-3: CASSETTE SIDE L/R (Refer to Fig. 2-3-A)

1. Remove the Locker Spring.
2. Unlock the 4 supports ① and then remove the Cassette Side L/R.
3. Unlock the support ② and then remove the Locker R.



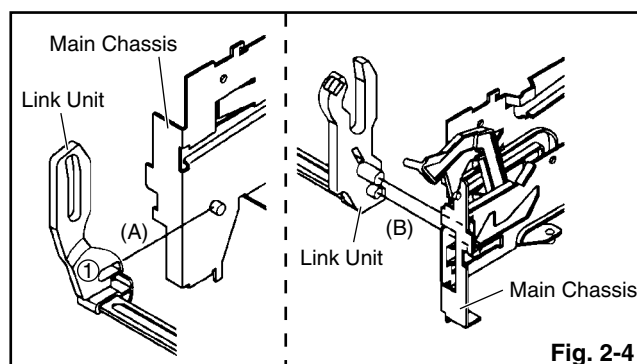
NOTE:

1. In case of the Locker R installation, check if the one position of Fig.2-3-B are correctly locked.
2. When you install the Cassette Side R, be sure to move the Locker R after installing.



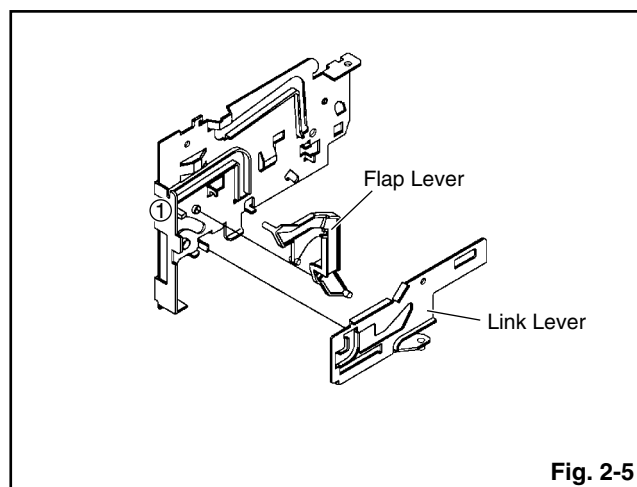
2-4: LINK UNIT (Refer to Fig. 2-4)

1. Set the Link Unit to the Eject position.
2. Unlock the support ①.
3. Remove the (A) side of the Link Unit first, then remove the (B) side.



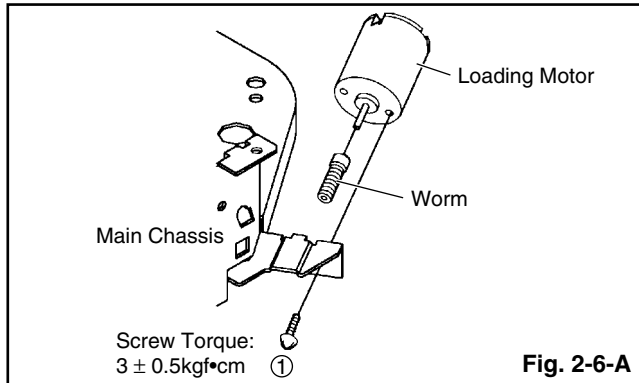
2-5: LINK LEVER/FLAP LEVER (Refer to Fig. 2-5)

1. Extend the support ①.
2. Remove the Link Lever.
3. Remove the Flap Lever.



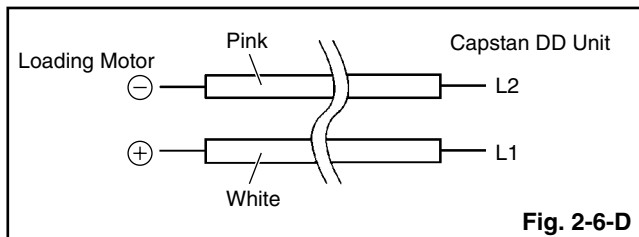
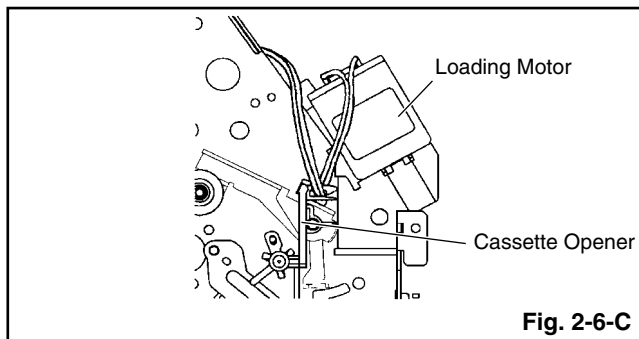
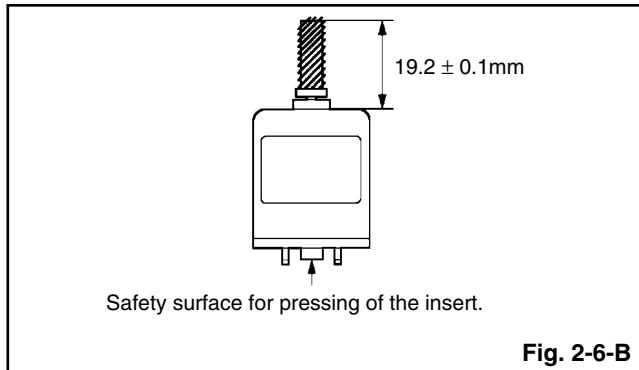
2-6: LOADING MOTOR/WORM (Refer to Fig. 2-6-A)

1. Remove the screw ①.
2. Remove the Loading Motor.
3. Remove the Worm.



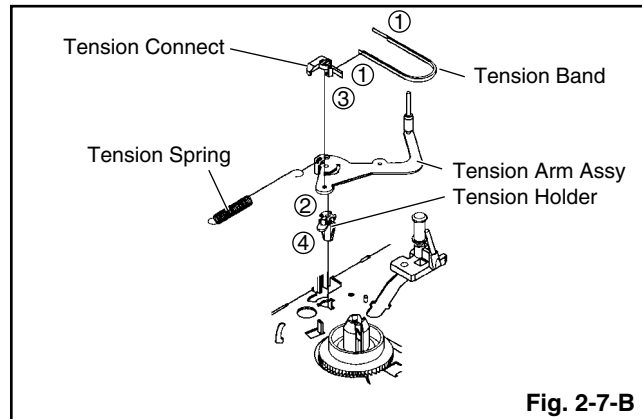
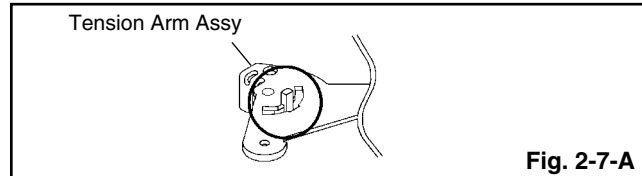
NOTE:

1. In case of the Worm installation, check if the value of the Fig. 2-6-B is correct.
2. In case of the Loading Motor installation, hook the wire on the Cassette Opener as shown Fig. 2-6-C.
3. When installing the wires between Capstan DD Unit and Loading Motor, connect them correctly as shown Fig. 2-6-D.



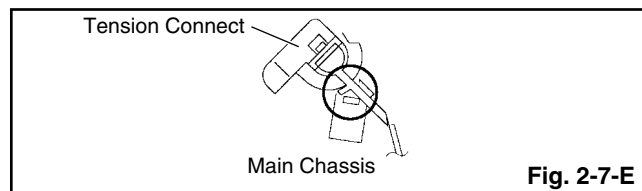
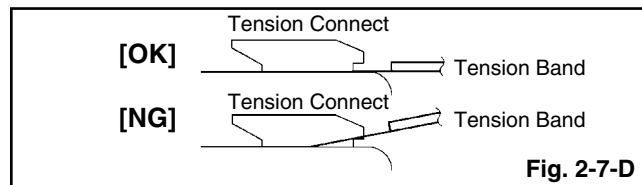
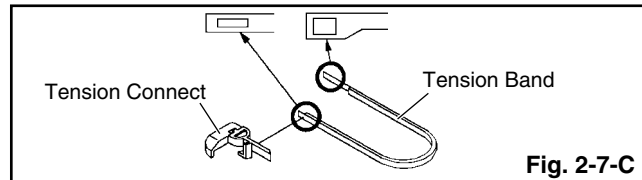
2-7: TENSION ASSY (Refer to Fig. 2-7-B)

1. Turn the Pinch Roller Cam clockwise so that the Tension Holder hook is set to the position of Fig. 2-7-A to move the Tension Arm Assy.
2. Remove the Tension Spring.
3. Unlock the 2 supports ① and remove the Tension Band.
4. Unlock the support ② and remove the Tension Arm Assy.
5. Unlock the support ③ and remove the Tension Connect.
6. Float the hook ④ and turn it clockwise then remove the Tension Holder.



NOTE:

1. In case of the Tension Band installation, note the direction of the installation. (Refer to Fig. 2-7-C)
2. In case of the Tension Band installation, install correctly as Fig. 2-7-D.
3. In case of the Tension Connect installation, install as the circled section of Fig. 2-7-E.



2-8: T BRAKE ARM/T BRAKE BAND

(Refer to Fig. 2-8-A)

1. Remove the T Brake Spring.
2. Turn the T Brake Arm clockwise and bend the hook section to remove it.
3. Unlock the 2 supports ① and remove the T Brake Band.

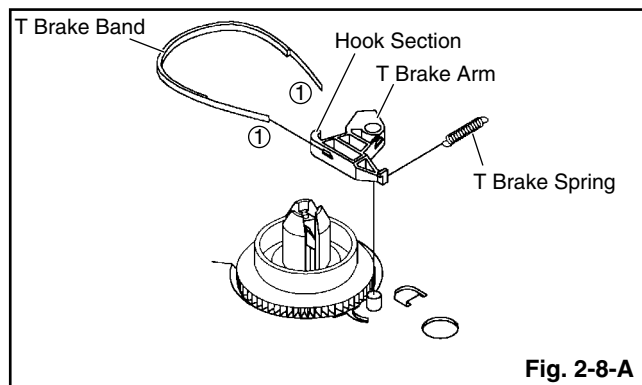


Fig. 2-8-A

NOTE:

1. In case of the T Brake Band installation, install correctly as Fig. 2-8-B.

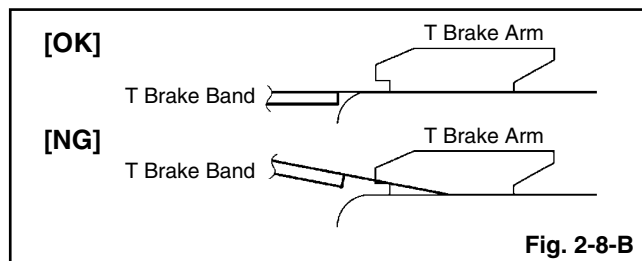


Fig. 2-8-B

2-9: S REEL/T REEL/IDLER ARM ASSY/IDLER GEAR (Refer to Fig. 2-9-A)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers ①.
3. Remove the Idler Arm Assy and Idler Gear.

NOTE:

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel. (Use gloves.) (Refer to Fig. 2-9-A) Do not adhere the stains on it.
5. When you install the reel, clean the shaft and grease it (FG-84M). (If you do not grease, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. (Refer to MECHANICAL ADJUSTMENT)

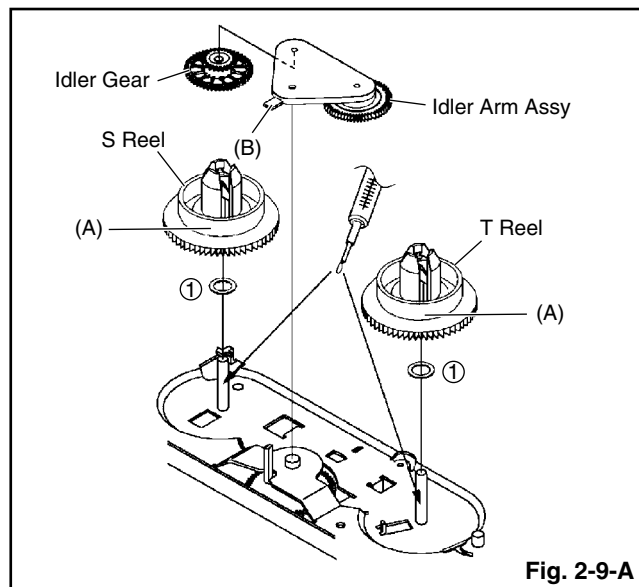


Fig. 2-9-A

NOTE:

1. In case of the S Reel and T Reel installation, check if the correct parts are installed. (Refer to Fig. 2-9-B)
2. In case of the Idler Arm Assy installation, install correctly as Fig. 2-9-C. And also set it so that the section "B" of Fig. 2-9-A is placed under the Main Chassis tab.

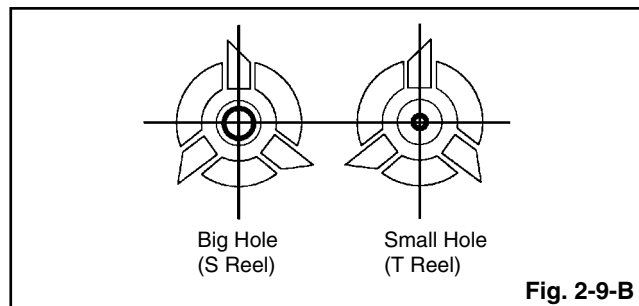


Fig. 2-9-B

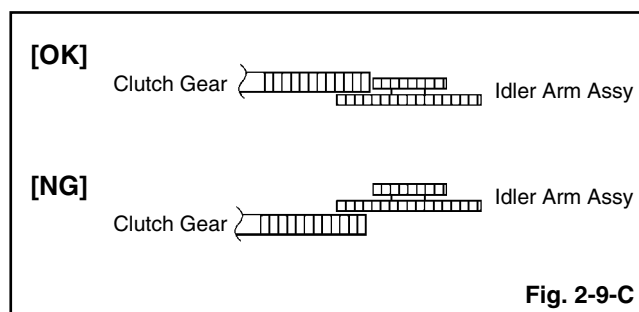


Fig. 2-9-C

2-10: CASSETTE OPENER/PINCH ROLLER BLOCK/P5 ARM ASSY (Refer to Fig. 2-10-A)

1. Unlock the support ① and remove the Cassette Opener.
2. Remove the Pinch Roller Block and P5 Arm Assy.

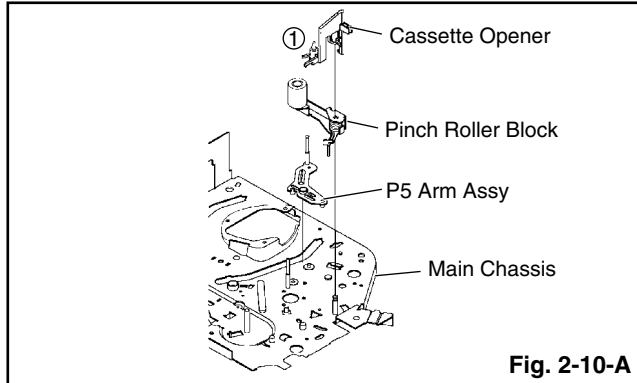


Fig. 2-10-A

NOTE:

1. Do not touch the Pinch Roller. (Use gloves.)
2. In case of the Pinch Roller Block and the Pinch Roller Cam installation, install correctly as Fig. 2-10-B.

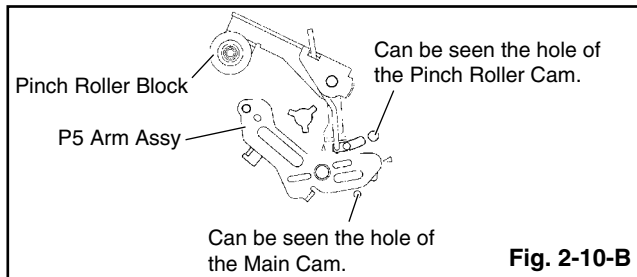


Fig. 2-10-B

2-11: A/C HEAD (Refer to Fig. 2-11-A)

1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

NOTE:

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-11-B.
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).

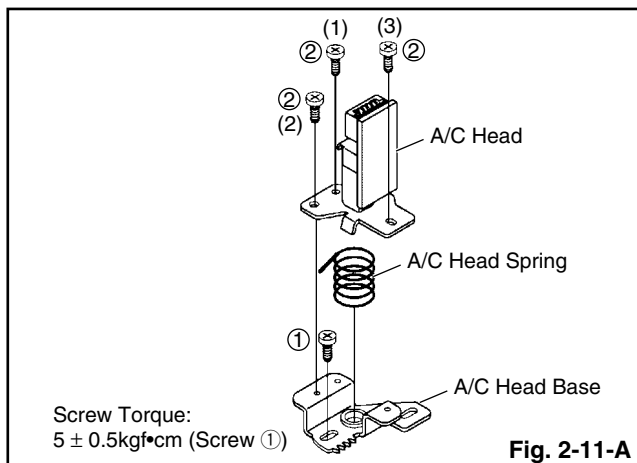


Fig. 2-11-A

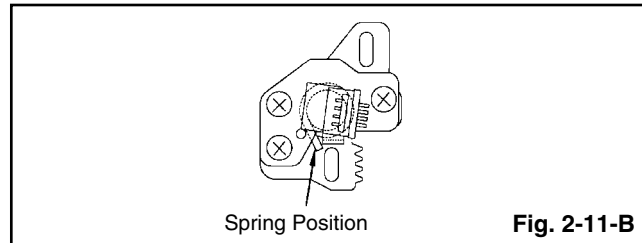


Fig. 2-11-B

2-12: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-12)

1. Remove the screw ①.
2. Remove the FE Head.

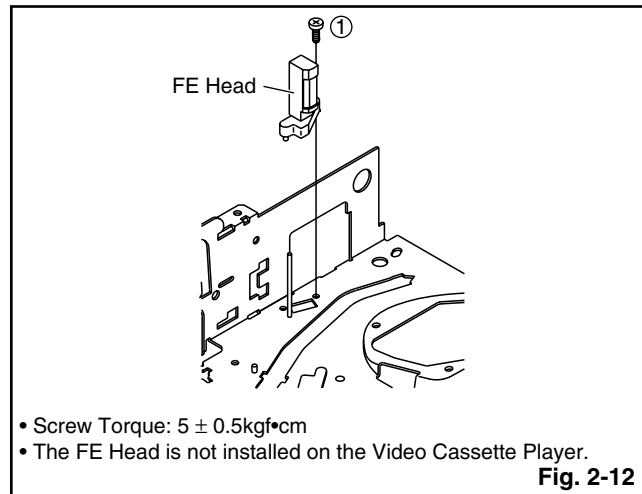


Fig. 2-12

2-13: AHC ASSY/CYLINDER UNIT ASSY (Refer to Fig. 2-13)

1. Unlock the support ① and remove the AHC Assy.
2. Disconnect the following connector: (CD2001)
3. Remove the 3 screws ②.
4. Remove the Cylinder Unit Assy.

NOTE:

1. When you install the Cylinder Unit Assy, tighten the screws from (1) to (3) in order while pulling the Assy toward the left front direction.

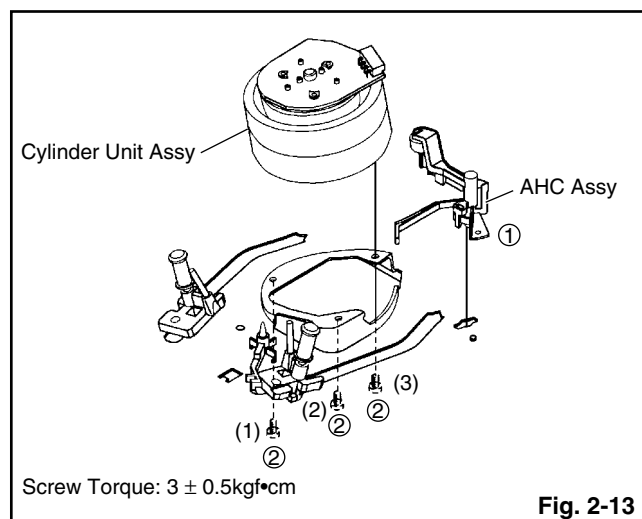
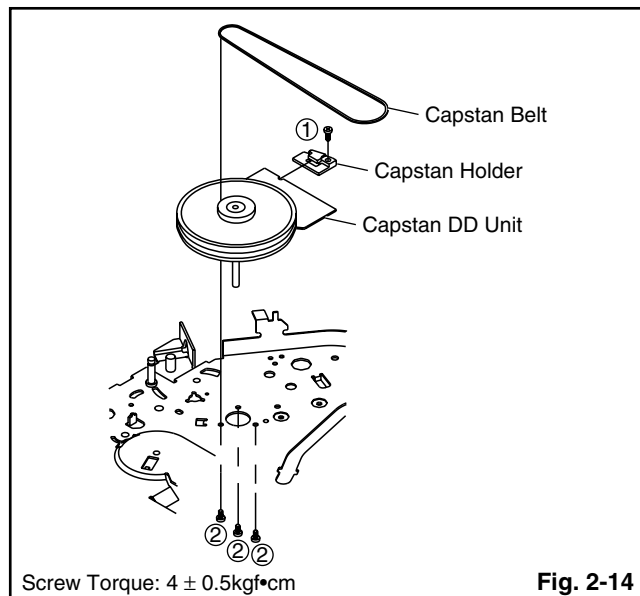


Fig. 2-13

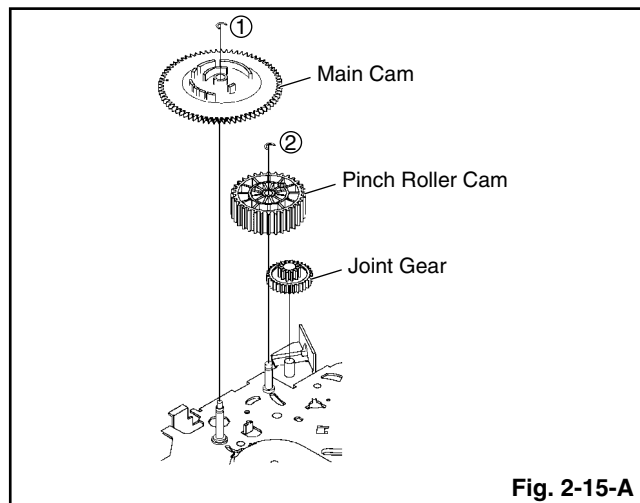
2-14: CAPSTAN DD UNIT (Refer to Fig. 2-14)

1. Remove the Capstan Belt.
2. Remove the screw ①.
3. Remove the Capstan Holder.
4. Remove the 3 screws ②.
5. Remove the Capstan DD Unit.



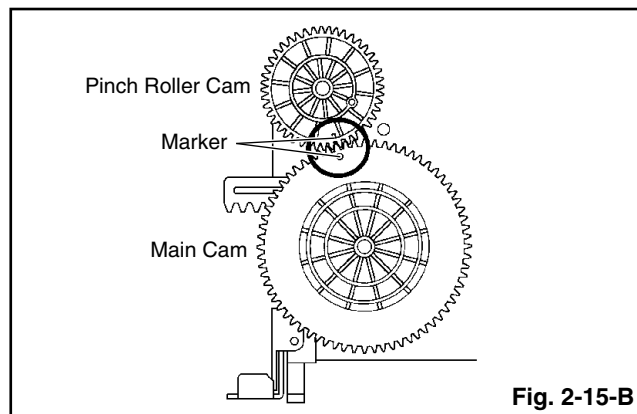
2-15: MAIN CAM/PINCH ROLLER CAM/JOINT GEAR (Refer to Fig. 2-15-A)

1. Remove the E-Ring ①, then remove the Main Cam.
2. Remove the E-Ring ②, then remove the Pinch Roller Cam and Joint Gear.



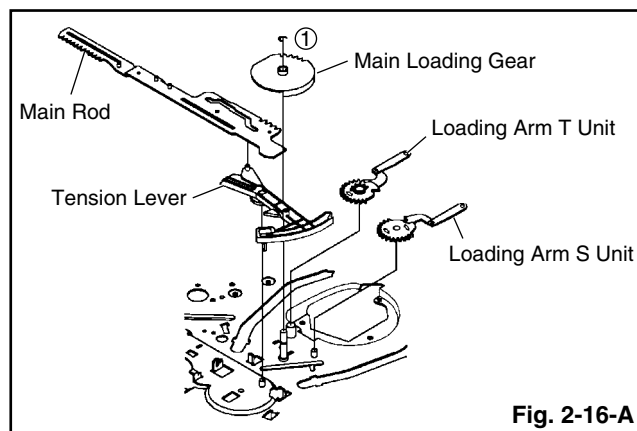
NOTE:

1. In case of the Pinch Roller Cam and Main Cam installation, install them as the circled section of Fig. 2-15-B so that the each markers are met. (Refer to Fig. 2-15-B)



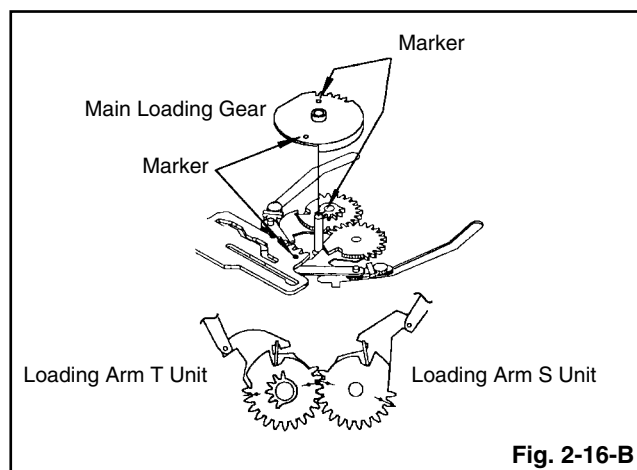
2-16: LOADING GEAR S/T UNIT (Refer to Fig. 2-16-A)

1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Remove the Main Rod, Tension Lever, Loading Arm S Unit and Loading Arm T Unit.



NOTE:

1. When you install the Loading Arm S Unit, Loading Arm T Unit and Main Loading Gear, align each marker. (Refer to Fig. 2-16-B)



2-17: CLUTCH ASSY/RING SPRING/CLUTCH LEVER/CLUTCH GEAR (Refer to Fig. 2-17-A)

1. Remove the Polyslider Washer ①.
2. Remove the Clutch Assy and Ring Spring.
3. Remove the Clutch Lever.
4. Remove the Coupling Gear, Coupling Spring and Clutch Gear.

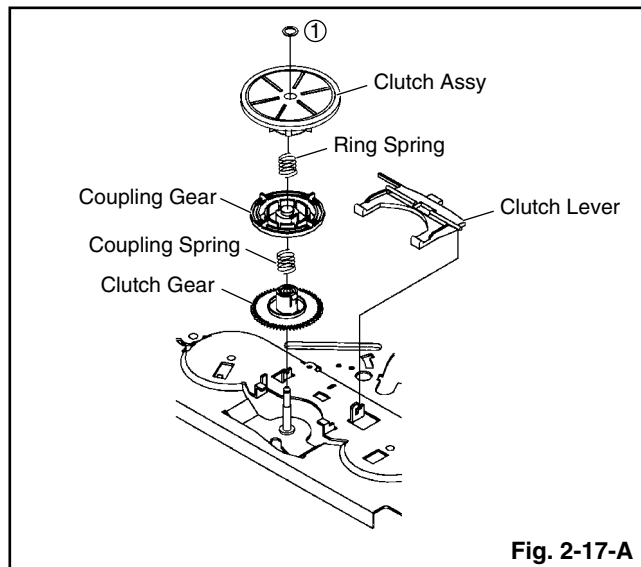


Fig. 2-17-A

NOTE:

1. In case of the Clutch Assy installation, install it with inserting the spring of the Clutch Assy into the dent of the Coupling Gear. (Refer to Fig. 2-17-B)

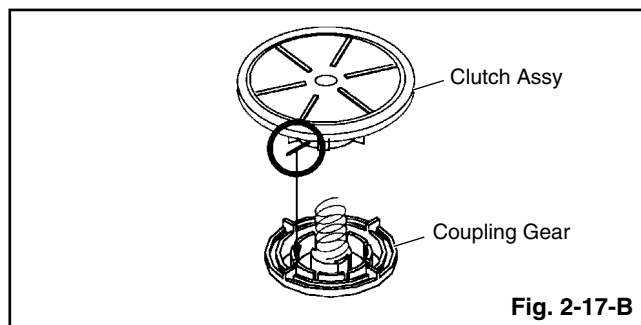


Fig. 2-17-B

2-18: CASSETTE GUIDE POST/INCLINED BASE S/T UNIT/P4 CAP/LED REFLECTOR (Refer to Fig. 2-18-A)

1. Remove the P4 Cap.
2. Unlock the support ① and remove the Cassette Guide Post.
3. Remove the Inclined Base S/T Unit.
4. Remove the screw ②.
5. Remove the LED Reflector.

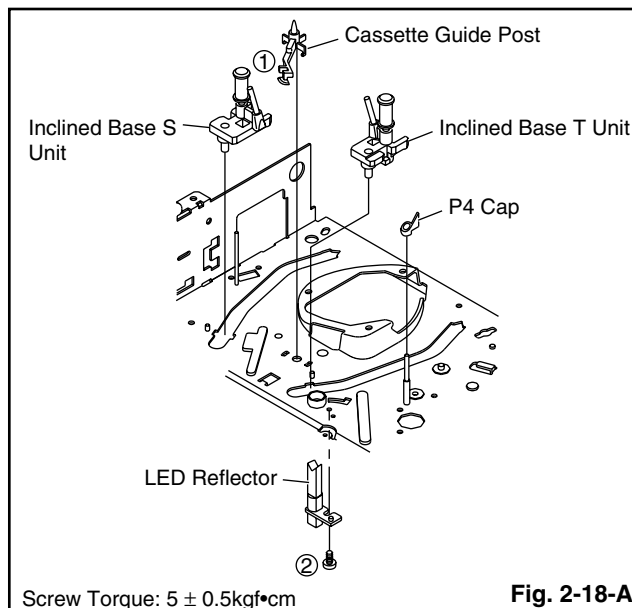
Screw Torque: $5 \pm 0.5 \text{ kgf} \cdot \text{cm}$

Fig. 2-18-A

NOTE:

1. Do not touch the roller of Guide Roller.
2. In case of the P4 Cap installation, install it with parallel for "A" and "B" of Fig. 2-18-B.
3. In case of the Cassette Guide Post installation, install correctly as the circled section of Fig. 2-18-C.

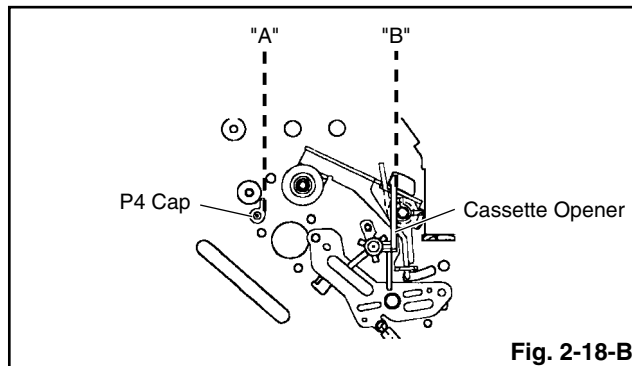


Fig. 2-18-B

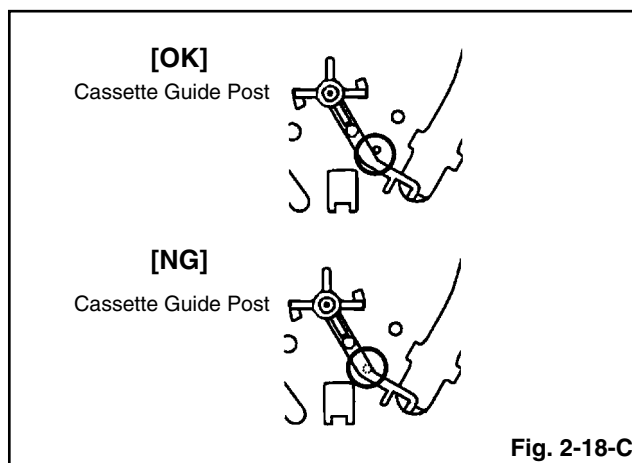


Fig. 2-18-C

7.9 CAUTIONS ON DIASSEMBLING AND ASSEMBLING

Screw List

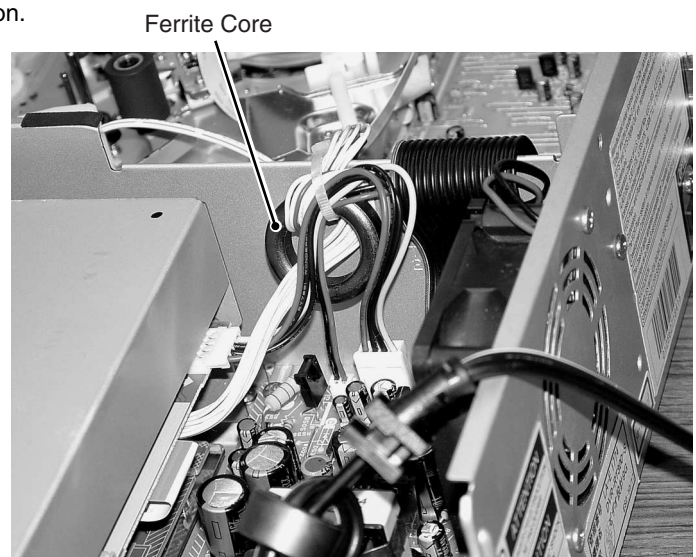
Parts Name	Num.	Used part	Parts Code
SCREW, TAP TITE(B) WH7 3*10 CH	1	HEAT SINK	8109I30A0U
SCREW, TAP TITE(P) WH10 M2.6*8 CH	1	SPRING of DVD FLAP	8110E2680U
SCREW, TAP TITE(P) BIND 2.6*8 CH	3	OPERATION PCB	8110022680U
SCREW, BIND 3*6 CH	4	ANGLE DVD + LOADER	810223060U
SCREW, TAP TITE(S) BIND 3*4 CH	1	TUNER	810723040U
SCREW, TAP TITE(B)R PAN 3*29 CH	3	VCR DECK	8109130B9U
SCREW, TAP TITE(B) R BIND 3*7 CH	13	VCR PCB 1 MPEG PCB 4 ANGLE DVD + BOTTOM 6 ANGLE DVD + SHIELD 2	810923070U
SCREW, TAP TITE(B) BIND 3*8 CH	12	POWER PCB 3 3PIN JACK 4 FAN 2 S-VIDEO 2 OPTICAL JACK 1	810923080U
SCREW, TAP TITE(B) BIND(3D) 3*6 NI	5	CABINET TOP	8109K30601

CORD CONNECTOR, CORD JUMPER List

Parts Name			Used part	REF NO.	Parts Code
CORD CONNECTOR	CU2A2701	L=270MM P=2.0MM 10PIN	VCR⇔MPEG 10 wires	CD7304	06CU2A2701
CORD CONNECTOR	CU2252802	L=285MM P=2.0MM 5PIN	VCR⇔OPERATION	CD651	06CU252802
CORD CONNECTOR	CU641202	4PIN L=120MM P=2.5MM	DVD DECK⇔POWER for DECK Power	CD504	06CU641202
CORD JUMPER	BH040061	L=60MM P=0.5MM H=8MM 40PIN	DVD DECK⇔MPEG	CD4001	12BH040061
CORD JUMPER	2F061501	6PIN FFC L=150MM	VCR⇔AC HEAD	CD102	122F061501
CORD JUMPER	2H0I1802	18PIN L=180MM P=1.0MM	MPEG⇔VCR	CD7303	122H0I1802
CORD JUMPER	2H0K1802	20PIN L=180MM P=1.0MM FFC	MPEG⇔VCR	CD7301	122H0K1802
CORD JUMPER	2H0K1802	20PIN L=180MM P=1.0MM FFC	MPEG⇔VCR	CD7302	122H0K1802

CAUTION

- When reattaching the Front Cabinet, attach the cabinet pressing the Flap of VCR side toward inside.
- When reattaching the POWER PCB Assy to the Plate bottom, tighten the two screws for the round holes first then tighten the screws for the slotted holes.
- When reattaching the Angle DVD to the DVD deck, tighten the screws for the round holes situated on the rear side first.
- Insert each flexible cable straight, to avoid loose connection.
- Be sure to pass the binder through the ferrite core that is attached to the CD7304 (10 wires that connect between MPEG and VCR) and secure and fix both the ferrite core and the CD7304 using the binder. If only the wires are secured but the ferrite core is not, the ferrite core may have movement and become damaged.
- When attaching the ferrite core to the CD7304, pass the wires through it twice (one wind around it). Incorrect attachment of the ferrite core may compromise its effects of reducing spurious radiation.



■ CAUTION (Continued)

- A 7. Be sure to reattach the Cover AC Head, which is for preventing noise from invading normal audio signals.

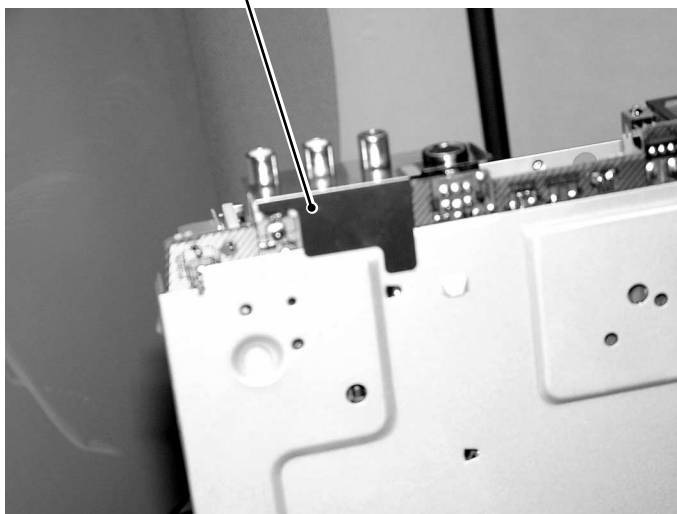
Cover AC Head



B

- C 8. Be sure to reattach the Shield 3 Pin to the front jack and the Shield Compo to the rear jack of the VCR MT PCB Assy. Those are for preventing electrostatics.

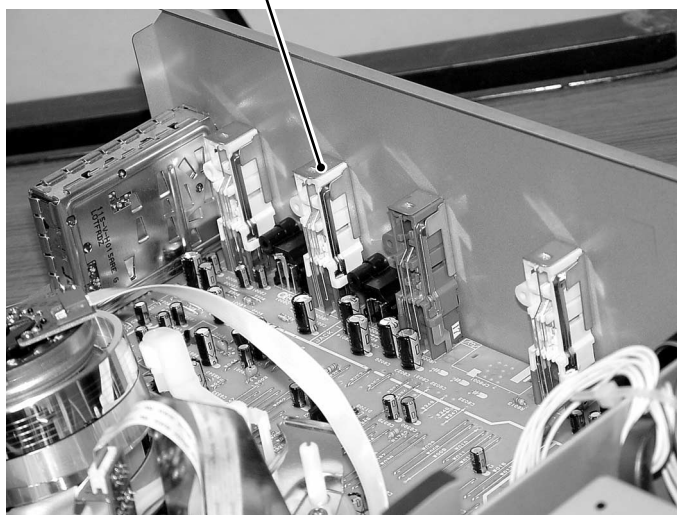
Shield 3 Pin



D

- E 9. Be sure to reattach the Shield 3 Pin so that part of it protrudes from the Plate bottom. Be careful that the Shield 3 Pin is not embedded between the Plate bottom and the circuit board.

Shield Compo



F

7.10 KEY TO ABBREVIATIONS

A A/C : Audio/Control
 ACC : Automatic Color Control
 AE : Audio Erase
 AFC : Automatic Frequency Control
 AFT : Automatic Fine Tuning
 AFT DET : Automatic Fine Tuning Detect
 AGC : Automatic Gain Control
 AMP : Amplifier
 ANT : Antenna
 A.PB : Audio Playback
 APC : Automatic Phase Control
 ASSY : Assembly
 AT : All Time
 AUTO : Automatic
 A/V : Audio/Video

B BGP : Burst Gate Pulse
 BOT : Beginning of Tape
 BPF : Bandpass Filter
 BRAKE SOL : Brake Solenoid
 BUFF : Buffer
 B/W : Black and White

C C : Capacitance, Collector
 CASE : Cassette
 CAP : Capstan
 CARR : Carrier
 CH : Channel
 CLK : Clock
 CLOCK (SY-SE) : Clock (Syscon to Servo)
 COMB : Combination, Comb Filter
 CONV : Converter
 CPM : Capstan Motor
 CTL : Control
 CYL : Cylinder
 CYL-M : Cylinder-Motor
 CYL SENS : Cylinder-Sensor

D DATA (SY-CE) : Data (Syscon to Servo)
 dB : Decibel
 DC : Direct Current
 DD Unit : Direct Drive Motor Unit
 DEMOD : Demodulator
 DET : Detector
 DEV : Deviation

E E : Emitter
 EF : Emitter Follower
 EMPH : Emphasis
 ENC : Encoder
 ENV : Envelope
 EOT : End of Tape
 EQ : Equalizer
 EXT : External

F F : Fuse
 FBC : Feed Back Clamp
 FE : Full Erase
 FF : Fast Forward, Flipflop
 FG : Frequency Generator
 FL SW : Front Loading Switch
 FM : Frequency Modulation
 FSC : Frequency Sub Carrier
 FWD : Forward

G GEN : Generator
 GND : Ground

H H.P.F : High Pass Filter
 H.SW : Head Switch
 Hz : Hertz

I IC : Integrated Circuit
 IF : Intermediate Frequency
 IND : Indicator
 INV : Inverter

K KIL : Killer

L L : Left
 LED : Light Emitting Diode
 LIMIT AMP : Limiter Amplifier
 LM, LDM : Loading Motor

L LP : Long Play
 L.P.F : Low Pass Filter
 LUMI. : Luminance

M M : Motor
 MAX : Maximum
 MINI : Minimum
 MIX : Mixer, mixing
 MM : Monostable Multivibrator
 MOD : Modulator, Modulation
 MPX : Multiplexer, Multiplex
 MS SW : Mecha State Switch

N NC : Non Connection
 NR : Noise Reduction

O OSC : Oscillator
 OPE : Operation

P PB : Playback
 PB CTL : Playback Control
 PB-C : Playback-Chrominance
 PB-Y : Playback-Luminance
 PCB : Printed Circuit Board
 P. CON : Power Control
 PD : Phase Detector
 PG : Pulse Generator
 P-P : Peak-to Peak

R R : Right
 REC : Recording
 REC-C : Recording-Chrominance
 REC-Y : Recording-Luminance
 REEL BRK : Reel Brake
 REEL S : Reel Sensor
 REF : Reference
 REG : Regulated, Regulator
 REW : Rewind
 REV, RVS : Reverse
 RF : Radio Frequency
 RMC : Remote Control
 RY : Relay

S S. CLK : Serial Clock
 S. COM : Sensor Common
 S. DATA : Serial Data
 SEG : Segment
 SEL : Select, Selector
 SENS : Sensor
 SER : Search Mode
 SI : Serial Input
 SIF : Sound Intermediate Frequency
 SO : Serial Output
 SOL : Solenoid
 SP : Standard Play
 STB : Serial Strobe
 SW : Switch
 SYNC : Synchronization
 SYNC SEP : Sync Separator, Separation

T TR : Transistor
 TRAC : Tracking
 TRICK PB : Trick Playback
 TP : Test Point

U UNREG : Unregulated

V V : Volt
 VCO : Voltage Controlled Oscillator
 VIF : Video Intermediate Frequency
 VP : Vertical Pulse, Voltage Display
 V.PB : Video Playback
 VR : Variable Resistor
 V.REC : Video Recording
 VSF : Visual Search Fast Forward
 VSR : Visual Search Rewind
 VSS : Voltage Super Source
 V-SYNC : Vertical-Synchronization
 VT : Voltage Tuning






X X'TAL : Crystal

Y Y/C : Luminance/Chrominance

7.11 DISC/CONTENT FORMAT

Discs which can be played back

In this unit, use only discs that meet the standard, such as those bearing the below logo marks on the disc label surface. If you use a non-standard disc, we cannot guarantee playback. Even if such a disc can be played back, we cannot guarantee the image or sound quality. The DVD logo is a registered trademark.

Media type	Logo mark
DVD-Video	
DVD-RW Ver.1.0 Ver.1.1 Ver.1.2 Ver.1.1CPRM support Ver.1.2CPRM support	
DVD-R Ver.2.0 (Ver.2.0/4x/8x)	
Audio CD*	
CD-R/CD-RW	

* This unit is designed to playback music Compact Discs (CD) that conform to the CD standard. CDs that contain (copy-restriction) signals to protect copyrights cannot be played back.

Older models of DVD recorders and DVD writers may reject DVD-RW Ver.1.2 / 4x discs. If you want to share DVD-RW discs between this recorder and an older recorder/writer, we recommend using Ver.1.1 discs.

Region management information

This unit is designed and manufactured to support the region management information that is recorded on a DVD disc. If the region number written on the DVD disc does not correspond to the region number of this unit, this unit cannot play that disc.

- The region number of this unit is "1".
- The unit will play DVD-Video discs marked with labels containing "1" or "ALL".

Example:  

Operating DVD-Video

- Some operations of DVD-Video may be prohibited by the manufacturer, or some operation methods or functions of the DVD-Video may be different from the description in this manual.
- If you attempt an operation that is prohibited by either the disc or the unit, a "⏏" mark will appear on the TV monitor. For operations prohibited by the disc, see the information that came with the disc.
- When the menu screen or the operation guide appears during disc playback, follow the displayed information.

Discs which cannot be played back

The discs listed below cannot be played back in general. Even if one of these can be played back, it may not be played back correctly. If a disc is played back by mistake, extensively loud sounds may blow the speakers or may damage the hearing of those in hearing range.

Do not playback the discs listed below

CDG, Photo-CD, CD-ROM, CD-TEXT, CD-EXTRA, VCD, SVCD, SACD, PD, CDV, DVD-ROM, DVD-RAM, DVD+R/RW, DVD audio, etc.

The below DVD-Video may not be played back.

- DVD-Video that do not have the region number "1" or "ALL".
- PAL or SECAM DVD-Video.
- Prohibited or business-use DVD-Video.

CD-R/CD-RWs cannot be played back for the following reasons.

- Compatibility of the disc and this unit.
- Compatibility of the disc and the recorder used.
- Unfinalized discs.

Do not playback the following discs. Playback of these discs may cause a failure.



- Discs on which paper, labels or stickers are affixed.
- Discs that have sticky areas left by adhesive tape.
- Special-shaped discs.

PC-created disc compatibility

Discs recorded using a personal computer may not be playable in this unit due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.

Discs on which video can be recorded

To record video with this unit, use the discs below:

Media type	Logo mark
DVD-RW Ver.1.0 Ver.1.1 Ver.1.2 Ver.1.1CPRM support Ver.1.2CPRM support	
DVD-R Ver.2.0 (Ver.2.0 /4x /8x)	

DVD-RW

- The disc can be erased and used again about 1,000 times.
- Only the VR mode can be used for Ver.1.0 discs.
- With Ver.1.1/1.2 discs, you can record by selecting the VR mode or Video mode.
- When you record in the VR mode, you can repeatedly record and erase. By erasing unnecessary titles, you effectively increase remaining time.
- When you record in the Video mode, you can record until the disc becomes full.
- When you use the Video mode, you can newly record on the disc by formatting the disc. However, if the disc is formatted, all the recorded contents will be erased.

DVD-R

- You can record on the disc only in the Video mode.
- You can record until the disc becomes full.
- Finalizing the discs allows playback on other DVD players. However, the finalized discs can no longer be recorded.
- Discs can be recorded to repeatedly until they are finalized.

Note

- There are some players that cannot playback discs that were recorded with this unit. We cannot guarantee the playback with other units.
- This unit cannot record on DVD-R and DVD-RW discs that are 8 cm in diameter.
- This unit cannot record on CD-R or CD-RW.

Recording format

This unit has two modes for formatting discs for recording: VR mode and Video mode.

When a blank, new disc is loaded into this unit, the automatic format function starts to format the disc. (For the disc format setting in this step.)

VR mode

- This mode can be used for DVD-RW.
- In this mode, the discs can be recorded and edited repeatedly.
- The disc recorded in this mode can be played back with other DVD-RW-compatible players.
- When a Ver.1.1 CPRM or Ver.1.2 CPRM disc is used, you can record a "Copy Once" program.

Video mode

- This mode can be used for DVD-R and DVD-RW (Ver.1.1/1.2).
- When you finalize the disc after recording, the disc recorded with this unit can be played back with other DVD players.
- Recording, editing or playback of an unfinalized disc can be done only with this unit. However, there is some limitation to editing operations.
- In this mode, you cannot record a "Copy Once" program.
- When you record a TV program of a bilingual broadcast, only one of the audio modes can be recorded. You have to select it.

Format modes that can be used each disc

The usable format depends on the media type as shown in the below table.

Media type	Format	Available functions
DVD-RW Ver.1.0	VR mode	Playback, recording and editing (Original/playlist)
DVD-RW Ver.1.1 and 1.2	VR mode	Playback, recording and editing (Original/playlist)
	Video mode	Playback and recording Editing (with limitation)
DVD-R Ver.2.0 (Ver.2.0/4x/8x)	Video mode	Playback and recording Editing (with limitation)

1234

7.12 CLEANING



A Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

Position to be cleaned	Cleaning tools
Pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

Position to be cleaned	Cleaning tools
Fans	Cleaning paper : GED-008

B

C

D

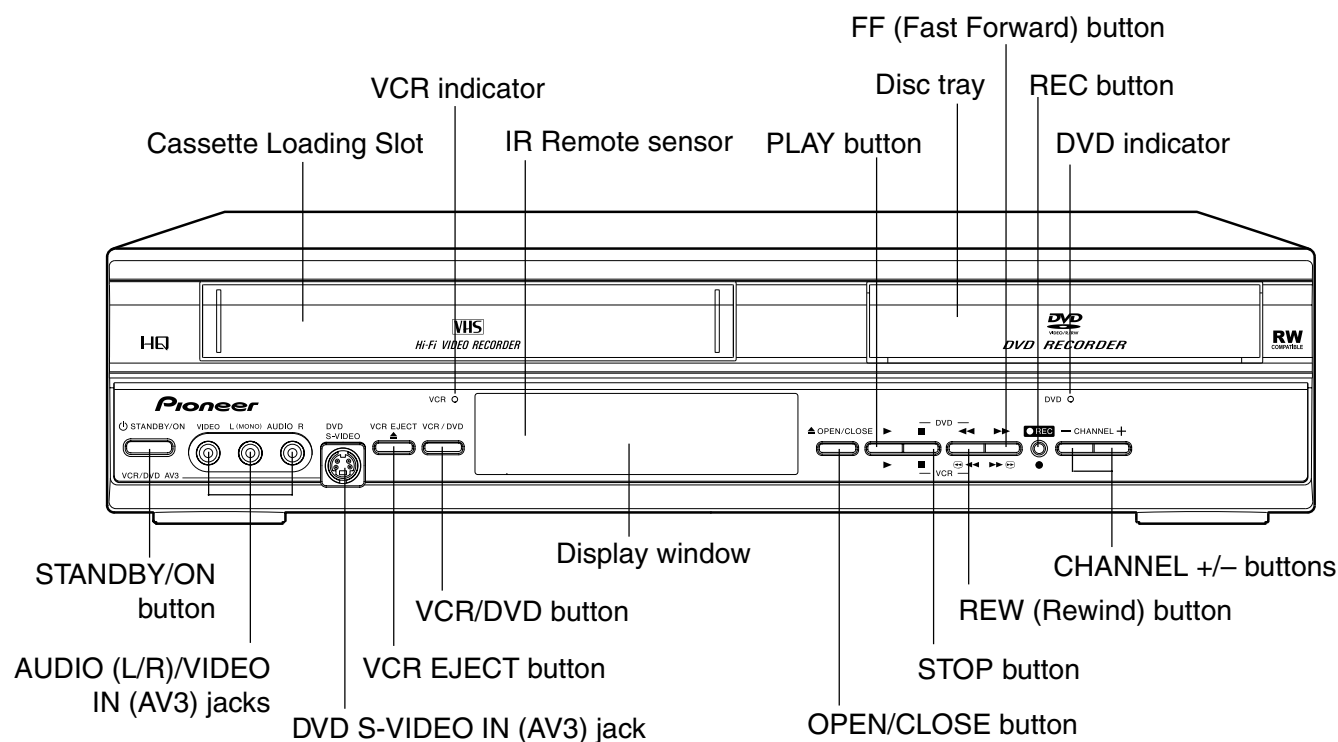
E

F

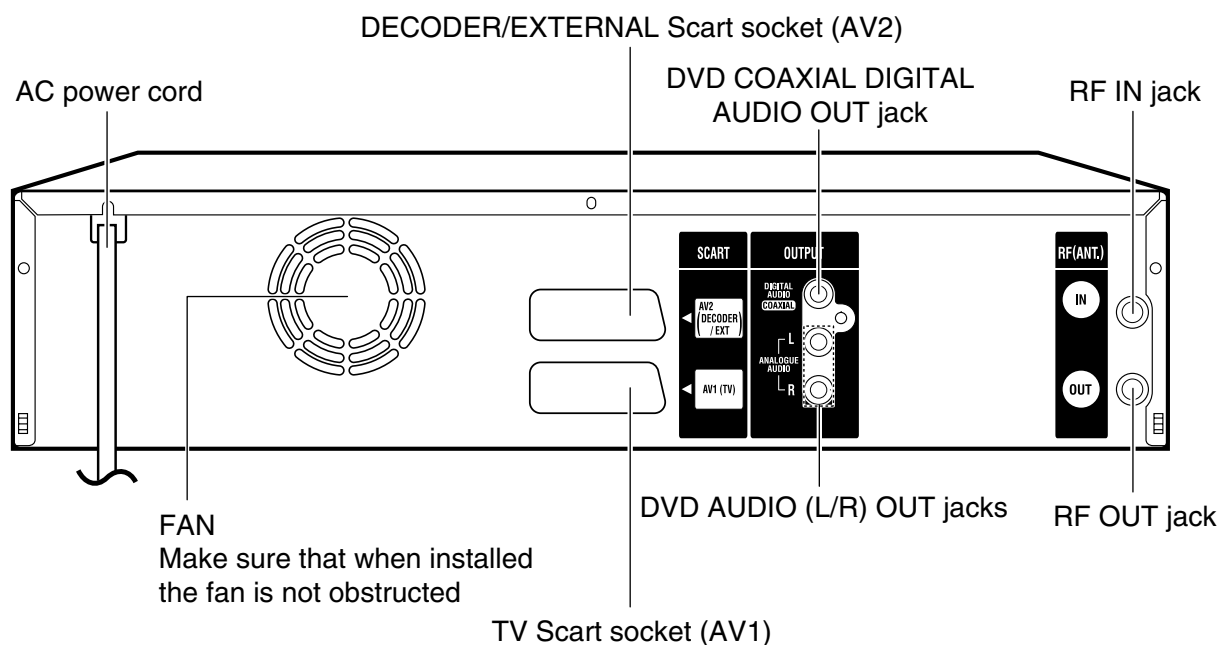
8. PANEL FACILITIES

FRONT AND REAR SECTION

Front

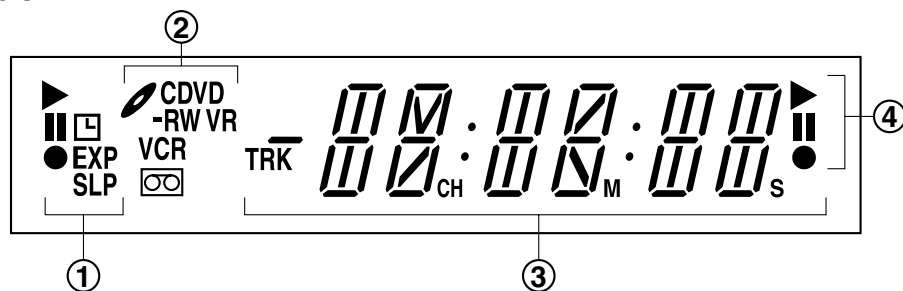


Rear



■ DISPLAY SECTION

■ Display window



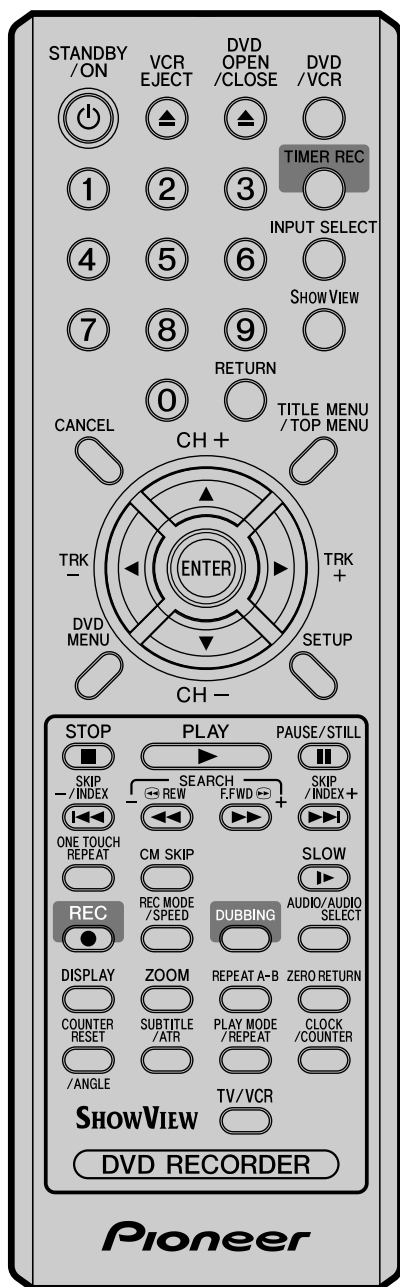
No.	Display	Description
①		Lights during video tape playback.
		Video tape is temporarily stopped.
		Lights during video tape recording.
		Timer recording display.
	XP/SP/LP/EP	4 DVD recording modes. XP, SP, LP or EP can be selected in turn by pressing the REC MODE/SPEED repeatedly.
	SP/LP	2 VCR recording modes. SP or LP can be selected in turn by pressing the REC MODE/SPEED repeatedly.
②		Appears when a CD is inserted.
		Appears when a CD-R is inserted.
		Appears when a CD-RW is inserted.
		Appears when a DVD-Video is inserted.
		Appears when a DVD-R is inserted.
		Appears when a DVD-RW is inserted.
	VR	Appears when a DVD-RW in VR mode is inserted. When the disc is set to video mode, VR does not appear.
	VCR	Appears when the tape or disc is played back or the SETUP menu is displayed.
		Video tape is in the unit.
③	10:00	Clock display (Colon [:] flashes).
	01h00m00s	Counter display in hour/minute/second for VCR/DVD, minute/second for CD.
	2CH	TV channel display.
	TRK 002	Track number display for CD.
	A1/A2/A3	The external input channel (AV1, AV2, or AV3) display.
④		Lights during playback of DVD and CD. Flashes in auto resume.
		DVD or CD is temporarily stopped.
		Lights during DVD recording.

NOTE:

Some discs may not playback correctly, or chapter number, playback time, etc may not be displayed.

■ REMOTE CONTROL SECTION

■ Remote control unit



STANDBY/ON	Turns power on/off.
VCR EJECT	Ejects the cassette tapes.
DVD OPEN/CLOSE	Opens or Closes the tray.
DVD/VCR	Switches to operation between VCR and DVD.
0-9	Direct channel selection of TV. Entering a Pluscode for VIDEO Plus+ timer programming Setting input. Entering a password.
TIMER REC	Sets the unit to start recording at a preset time.
INPUT SELECT	SCART input or AV-Front input.
VIDEO Plus+	Display the VIDEO Plus+ program screen.
RETURN	Close the menu window.
CANCEL	Deletes the Timer recording program. Cancels input data in the setting mode.
TITLE MENU/TOP MENU	Displays titles of a DVD disc.
CH +/-	Channel selection for VCR.
▲ / ▼	Cursor buttons.
TRK (TRACKING) +/-	Manual tracking in the playback mode for VCR.
◀ / ▶	Cursor buttons.
ENTER	Option selection in the menu.
DVD MENU	Displays the menu of the DVD disc.
SETUP	Displays the setup menu.
STOP	Stop.
PLAY	Playback.
PAUSE/STILL	Still picture/Recording pause on/off.
SKIP ◀/▶	Skips chapters in the forward or reverse direction.
INDEX -/+	Searches for the INDEX mark of a tape.
REW/SEARCH -	Rewind/Review playback.
F.FWD/SEARCH +	Fast Forward/Forward search playback.
ONE TOUCH REPEAT	Skips the DVD playback back 10 seconds.
CM SKIP	Skips commercial breaks.
SLOW	Slow motion playback.
REC	Recording/OTR.
REC MODE/SPEED	Selects the recording mode.
DUBBING	Copies VCR to DVD or DVD to VCR.
AUDIO	Changes the soundtrack language of the DVD.
AUDIO SELECT	Switches sound between mono and stereo.
DISPLAY	Displays VCR or DVD operation status.
ZOOM	Zoom (for DVD).
REPEAT A-B	Repeats playback between A and B. (DVD/CD)
ZERO RETURN	Stops the tape when the counter reaches 00h00m00s
COUNTER RESET	Resets the counter to 00h00m00s
ANGLE	Changes playback angle of a DVD disc.
SUBTITLE	Selects subtitles of the DVD disc.
ATR	Digital AUTO TRACKING.
PLAY MODE	Displays the playback mode.
REPEAT	Repeats playback.
CLOCK/COUNTER	Changes the front panel display mode.
TV/VCR	Changes the TV/VCR.

Jigs list

A

Name	Jig No.	Remarks
VHS Alignment Tape	GGV1222	Hi-Fi Audio (For 4 heads mode)
VHS Alignment Tape	GGV1223	X Value Adjustment (For 4 heads mode)
VHS Alignment Tape	GGV1224	EP Monoscope, 6kHz (For 4 heads mode)
Adapter	GGF1506	VSR Torque, Brake Torque (S Reel/T Reel Assy)
Dial Torque Gauge (10-90 gf•cm)	GGF1507	Brake Torque (T Reel Assy)
Dial Torque Gauge (60-600 gf•cm)	GGF1508	VSR Torque, Brake Torque (S Reel)
Post Adjustment Screwdriver	GGF1509	Guide Roller Adjustment
X Value Adjustment Screwdriver	GGF1510	X Value Adjustment
Mater Plane	GGF1511	Reel Disk Height Adjustment
Reel Disk Height Adjustment Jig	GGF1512	Reel Disk Height Adjustment
Torque Tape (VHT-063)	GGV1186	Playback Torque, Back Tension Torque During Palyback

B

C

D

E

F